INSIDE: HOW TO FISH "PECK" AND LIVE TO TELL ABOUT IT

Montana Outdoors

MONTANA FISH, WILDLIFE & PARKS | $3.50

MARCH–APRIL 2022

SHARPTAILS
CROSSING THE GREAT DIVIDE

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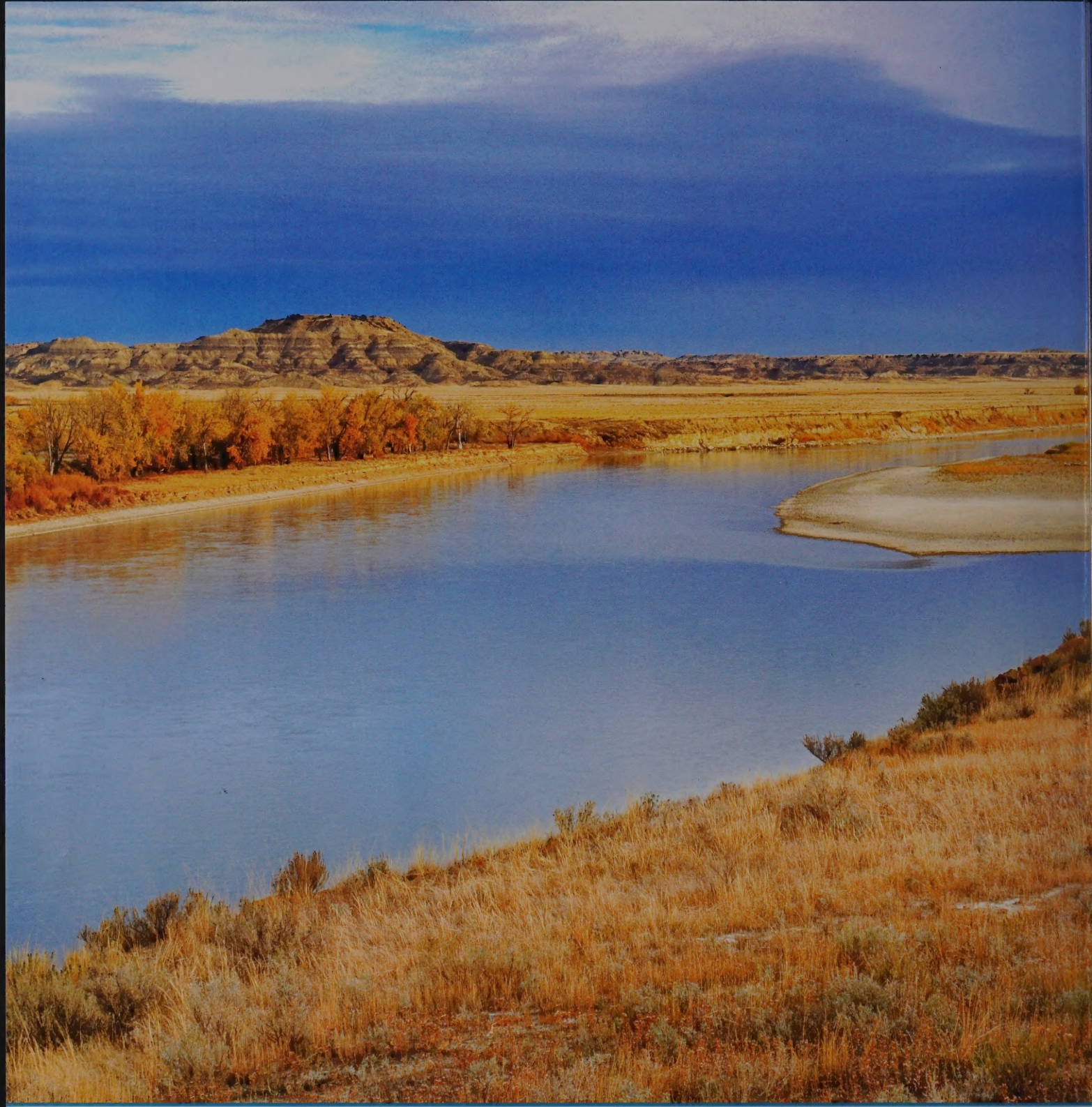
GRILLED SOY-GLAZED PHEASANT LEGS
JACKPOT! WINNING THE LICENSE LOTTERY
HOW DOES A GRIZZLY CROSS THE FREEWAY?
NEW ENERGY FOR THE LOWER YELLOWSTONE RIVER



Montana Outdoors

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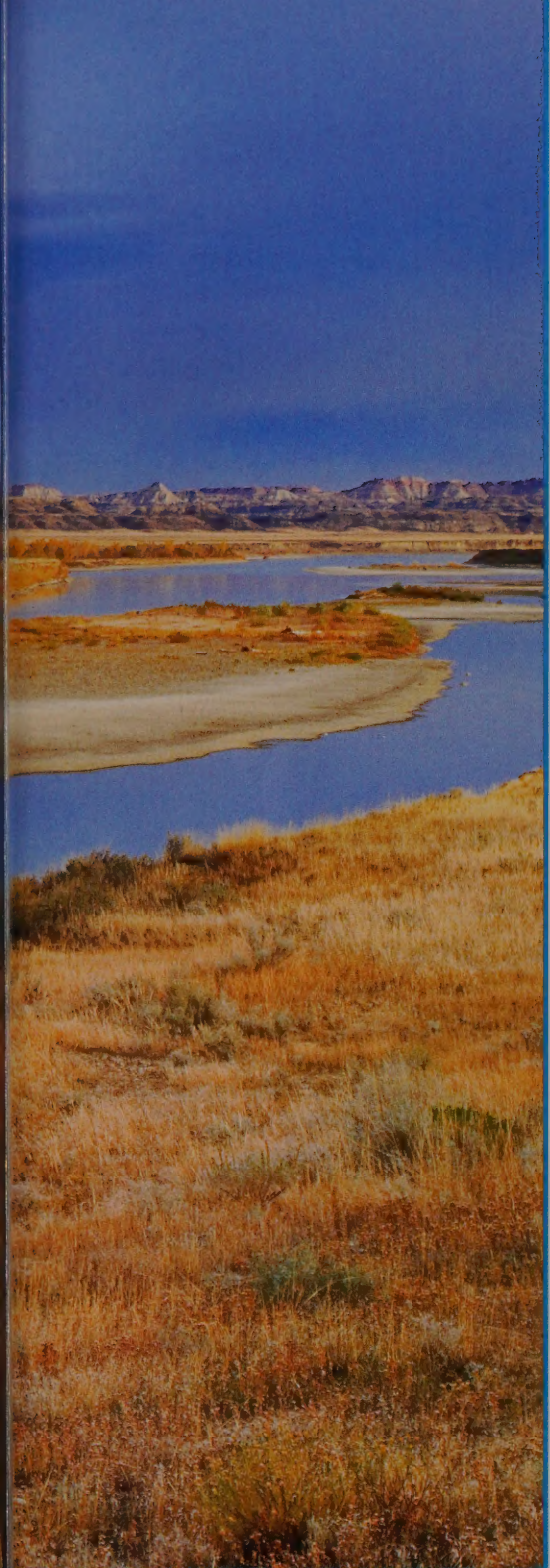

PADDLE IN PEACE Floating down the remote lower Yellowstone River, shown here near Terry, is like taking a trip back in time. More people want to experience this scenic solitude. See page 22 to learn how local boosters are working to attract tourists without spoiling what makes the region so appealing today. Photo by John Lambing.

FRONT COVER Once abundant, sharp-tailed grouse have disappeared from the mountain valley grasslands west of the Continental Divide. Now, a group of grouse devotees is returning the birds home. Photo by Donald M. Jones.

Montana Outdoors

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Coalition applauds migration article and work

The Migration Coalition appreciates Andrew McKean's well-written article "Moving Right Along" (November-December, 2021) and FWP's continued efforts to work with landowners on accommodating wildlife movement. Our coalition members look forward to working with landowners and the department on solutions for working lands and healthy wildlife populations.

Gary Burnett,
Executive Director, Heart of the Rockies Initiative, Missoula

When doves die

Today I canceled the family subscription (in my deceased parents' names). I was beyond disgusted by the article about "hunting" doves ("A Fast, Fun Shoot," September-October 2021). My family has always supported wildlife conservation, and we have actively been involved in bird rescue (including owls, songbirds, chickens, pigeons, and doves). Perhaps you don't realize these birds' lives are worth more than the momentary thrill of killing them, and the approximately two tablespoons of meat their bodies might provide. They are sentient beings that deserve better than to die at the hands of a "fearless hunter." I do hope you reconsider your audience and refrain from catering to bloodthirsty gun-owners who kill for kicks. There are so many more Montanans that love our wildlife live.

Whitney C. Hedman
Hamilton

Too many wolves in Libby

I enjoy *Montana Outdoors* and was pleased to see Director Hank Worsech's position on Montana wolf management ("Out Point of View," November-December). I live just outside of Libby and

SPECIAL REPORT
MOVING RIGHT ALONG
How FWP, landowners, and conservation groups help ease the way for wildlife to migrate and move seasonally from one habitat to another.
BY ANDREW MCKEAN

have enjoyed hunting white-tailed deer here for over 30 years. Wolves have had a tremendous impact on deer numbers here. I have spent my career working in the woods and have seen deer numbers drop substantially since wolves arrived. I am old now, and young people just can't believe what white-tailed deer hunting used to be like in northwestern Montana.

A neighbor recently sent me a picture of a wolf right in our neighborhood of 64 homes. I could hardly believe it, until my wife and I were walking and a wolf started howling on the hill above the neighborhood. Director Worsech is right. We need to somehow reduce their numbers.

Paul Stantus
Libby

Classroom aid

I just received my issue of the November-December 2021 *Montana Outdoors*, and it rocks! I've been reading your magazine since I was a little person. The local high school just hired me to teach natural resources next trimester, and I was wondering if I could purchase or get 30 magazines donated to use in the classroom. There are so many topics in this issue that I'll be teaching: marten reintroduction, wildlife movement and migration, mountain lion management and conservation, and more. It's practically a textbook for my students.

> **"It's practically a textbook for my students."**

Chris Grohusky
Crook County High School, Prineville, OR

Editor responds: We have mailed Ms. Grohusky 30 issues for her class. We also always send copies of each issue to all school and public libraries in Montana. And we provide middle and high school teachers with worksheets for our major fish, wildlife, and outdoor recreation articles to help students improve their reading comprehension and analysis. Teachers rock!

No room for conspiracies

Even though I am not a hunter or fisherperson, I have always enjoyed *Montana Outdoors* and the perspective it gives me on those sports. I recognize that many people enjoy hunting and angling in this state. However, there is no room for conspiracy theories in a magazine that, according to your website, "shares stories about the wonders of Montana's fish, wildlife, and outdoors." I object strenuously to the inclusion of the following from one of your letters to the editor: "The antis against gun ownership say if they can't get our guns, they will target the shells or bullets." This is a political (and not factual) statement that has no place in your magazine.

Casey (Carol) Dawes
Missoula

It's the soil

The houndstongue seed you showed as "actual size" in your Invasive Species Spotlight (November-December) is twice the size of any I've ever seen. You must grow 'em big in Montana.

Danny McGuire
Milwaukee, WI

Editor replies: That was my error. Here's the actual size:

Native news

My friend is a Crow Indian with direct lineage. He was excited to read your awesome article on Chief Plenty Coups in your awesome magazine ("From Warrior to Warrior," November-December). Being a native Montanan, I am grateful for your efforts to bring such stories to light.

Ed Price
Dalton Gardens, ID

Correction

In the "Our Point of View" column of the November-December issue, we wrote that 66 wolves were reintroduced to Yellowstone National Park in 1995-96. The number was 31. The other 35 went to central Idaho.

Speak your mind

We welcome all your comments, questions, and letters to the editor. We edit letters to meet our needs for accuracy, style, and length. Write to us at Montana Outdoors, *P.O. Box 200701, Helena, MT 59620-0701. Or email us at: tdickson@mt.gov.*

Grilled Soy-Basted Pheasant Thighs with Spicy Cashews

Preparation time: 25 minutes | Cooking time: 20 minutes | Serves 3-5

GRILLED SOY-BASTED CHICKEN THIGHS BY JESSICA EMILY MARX

Almost all the "game" recipes featured on this page over the years are variations of ones originally written for chicken, pork, or beef. That's because almost all recipes are made for domestic meats. Cooks and cookbook writers aiming to elevate game dishes usually tweak their favorite standard recipes so they work for venison, upland birds, and waterfowl—like adding extra fat when using venison in a beef recipe, or braising wild ducks a bit longer in a dish created for pen-raised birds.

The quick and delicious recipe featured here is no exception. It's an adaptation of one by *New York Times* food editor Sam Sifton for skinless, boneless chicken thighs.

Pheasant thighs and drumsticks can be difficult to prepare. Both are easy to overcook, and there's not much meat on the drumsticks. But grilled quickly over an open flame, the meat in this recipe browns while being lacquered with a sugary soy basting sauce. I serve the thighs with rice (or a rice substitute, such as sautéed finely shredded cauliflower) and steamed broccoli, and eat the drumsticks for lunch the next day.

The recipe works just as well for fewer pheasant pieces, and feel free to add or substitute pheasant breasts (or chicken breasts, if flattened to one-half inch thick).

Toasted sesame oil, Sriracha sauce, and hoisin sauce are available in the Asian aisle of most Montana grocery stores.

Though the recipe calls for only one-third cup of the Sriracha-roasted cashews, I've increased that to a full cup. You'll definitely want to save the extras as snacks. As Sifton writes, "They are addictive."

—Tom Dickson is the Montana Outdoors *editor.*

HOT COMMODITY

Ten years ago, Sriracha sauce was hardly known in the United States. No longer. Thanks to social media influencers and television chefs, this Asian blend of hot chili peppers, distilled vinegar, garlic, sugar, and salt is heating up Lays potato chips, Doritos tortilla chips, Heinz ketchup, and other brand-name foods—not to mention the spicy cashew recipe featured here.

INGREDIENTS

- 1 c. unsalted cashews (whole or pieces)
- 1 T. honey
- 2 T. Sriracha sauce
- 3 T. toasted sesame oil
- ½ c. plus 3 T. soy sauce
- 2 T. hoisin sauce
- 1 T. cracked black pepper
- 10 pheasant thighs and 10 drumsticks (or 2.5 pounds of skinless, boneless chicken thighs)
  Note: Fewer pheasant or chicken pieces work with this same recipe. No need to adjust other ingredients.
- ¼ c. brown sugar
- 2 T. peeled and minced fresh ginger
- 4 scallions, sliced thin
- 5 or 6 sprigs cilantro, tough stems removed and roughly chopped (about 2 T.)

DIRECTIONS

Heat oven to 300 degrees. Put honey in a small bowl and microwave on high for 10 seconds to melt. Add cashews and Sriracha sauce and stir until nuts are coated. Line a small baking pan with foil and cover with the coated cashews, then place in the oven and bake 20 minutes. Remove the nuts from foil and let cool, then set aside two-thirds for later snacking and chop the rest roughly and set aside in a small bowl.

Meanwhile, in a large bowl, whisk together toasted sesame oil, ½ c. soy sauce, hoisin sauce, and black pepper. Add pheasant pieces and stir to coat. Refrigerate 15 minutes to 1 hour until you are ready to cook.

For the basting sauce, combine the remaining 3 T. soy sauce, brown sugar, and ginger in a small bowl, and whisk until the sugar has dissolved.

Fire up your grill and bring to medium heat. Coat grates with vegetable oil. Using tongs, remove pheasant pieces from marinade and cook, turning every few minutes, until they are well-browned but not crusty, approximately 6 minutes total (8 to 10 minutes for chicken thighs). Using a pastry brush, begin to baste them with the soy-ginger-sugar mixture, until they develop a lacquer, which takes another 4 minutes (8 to 10 minutes for chicken), again turning several times.

Transfer pheasant to a warmed platter, sprinkle with the chopped cashews, scallions, and cilantro, and serve. ■

Finding access solutions for elk management and elk hunting

Montana elk management has been in the news more than usual lately. The big issue is the lack of public access in areas overburdened by huge elk herds and FWP's attempts to reduce those numbers. Here's some background to help you make sense of what you're reading and hearing.

One of FWP's most important responsibilities is to manage elk. That means we restore populations where habitat and forage allow, but also decrease numbers where herds grow too big.

Thanks to successful restoration, Montana is now home to a lot of elk. That's good news. Montanans are passionate about elk hunting, and elk are a major draw for nonresident hunters, who bolster local economies.

But elk also knock down fences, eat haystacks, and graze pasture meant for cattle, causing major headaches for some landowners. These days, our focus is mainly on trying to reduce elk numbers in many areas.

The best way to accomplish that is with public hunting. Unfortunately, many elk have learned to hang out on private land off-limits to public hunting. When the hunting season ends, they move to the neighbor's ranch—which had been allowing public hunting—and knock down fences and eat hay.

Responding to constituents, the Montana Legislature has given FWP marching orders to bring elk numbers down to population "objectives"—levels that habitat and landowner tolerance support. But the state can't force property owners to allow the public onto their land to hunt and help reduce those numbers.

So what's the solution? How do we get more hunters onto private land to manage elk and increase hunting opportunities?

Many ranchers and other large landowners do allow public hunting, and for that we are grateful. As for those who choose not to, the state has for years tried to convince them to open their gates, if only just a little. Under state statutes, FWP can't help reduce depredation, such as by fencing haystacks, if a landowner doesn't allow at least some public hunting. That works in some cases but not others. FWP tried ending late-season hunts, hoping a five-week-only season would convince landowners to allow hunting to control elk populations on their property. It didn't. We've asked ranchers who allow hunting to talk to neighbors who don't. That hasn't worked either.

We've tried adding shoulder seasons and game damage permits, and even allowing hunters in some areas to take up to three cow elk per year. Elk numbers are still over objective in many hunting districts.

The approaches we've tried over the past two decades haven't brought elk numbers down or provided more access for public hunters. It's time to try something new. Same objective. Different approach: new incentives for landowners.

One involves increasing, carefully, the number of 454 Agreements—named for House Bill 454, envisioned by the Private Land/Public Wildlife Council and passed two decades ago during the 2001 legislative session and tweaked last session. These contracts give landowners "either-sex" permits, which they can use to harvest bulls on their property, in exchange for allowing nonpaying elk hunters on their land. We're also looking at other incentives that would convince property owners to allow at least some public use.

In addition to opening access, these measures could move some elk onto nearby public lands. They could also help build relationships among FWP biologists, landowners, and hunters.

FWP is not favoring landowners over regular hunters, as some have charged. But there's simply no denying that many landowners control something essential for effective elk management and hunter opportunity: access to elk. It seems reasonable to conduct some sort of fair exchange for that access. And remember: We have to manage elk where they are—increasingly, on private land—not where we wish they were, like on national forests.

It's also worth keeping in mind that most elk hunters are happy to harvest a cow elk. If we start allowing some landowners to take bull elk on their property in exchange for allowing more hunters a chance at cow elk, I think most hunters would favor that approach.

But maybe not. That's one reason I'm convening a new 12-member citizen advisory group that will meet through the fall of 2022 to figure out the most equitable, reasonable, and effective ways to reconcile public wildlife and private property rights regarding elk, elk hunting, and elk management.

As Martha Williams, the previous head of this department who is slated to become the new U.S. Fish & Wildlife Service director, wrote in *Montana Outdoors* two years ago: "We need to meet with those on the other side of an issue and understand their point of view. Then we can collectively use the shared understanding and trust as a foundation on which to build lasting progress." Exactly.

I understand why some hunters are concerned that new efforts to find solutions to our ongoing elk dilemma might eventually lead to commercializing or privatizing wildlife, as has been the case in some other western states. But I don't think that will happen here. Montanans are renowned for coming together to develop home-grown wildlife management solutions that maintain the right balance of public wildlife and private property rights. I'm confident we can do it again.

—**Hank Worsech**, Director, Montana Fish, Wildlife & Parks

SHUTTERSTOCK

ERIK PETERSEN

WARDEN OF WEST

ROBBY POHLE
Game Warden, West Yellowstone

A LOT OF PEOPLE THINK game wardens only check hunting and fishing licenses and catch poachers, but we also enforce many other outdoor recreation regulations, especially those related to snowmobiling and off-highway vehicle (OHV) riding.

It's important work because registration fees and annual trail pass fees go back into grooming snow trails, removing downed logs from OHV trails, putting up signs, and funding search-and-rescue operations. When I'm out checking snowmobilers and OHV users for their registration and trail passes, I'm also doing a lot of education, letting them know where that money goes.

Then each summer I do boat patrols on Hebgen, Quake, and Wade lakes, mainly checking fishing licenses and making sure boats aren't overloaded and are carrying the appropriate life jackets for everyone on board. In late summer and all fall I'm out patrolling during hunting season.

I've been a warden here in "West," as we call West Yellowstone, for five years. I grew up in Canada and then had several jobs after high school, including working as a deputy sheriff for Park County out of Gardiner. There I met a lot of great people with the U.S. Forest Service and National Park Service. I decided to go back to school at the University of Montana and try to get a position with one of those federal agencies. While in school, an opportunity with the FWP game warden program opened up, and I jumped on it and ended up here.

I couldn't be happier. This area has every type of recreation that FWP manages—camping, fishing, trapping, hunting, boating, OHV use, snowmobiling, you name it. Being from Canada, I don't mind the snow and cold one bit, and I love snowmobiling.

Another plus about this area is that there's a great team of law enforcement folks with FWP, the Forest Service, Gallatin County, the Department of Livestock, and other agencies, and we all help each other whenever we can.

My wife and I just had our first child, Robert, back in September. We're thinking that this part of the world will be a pretty neat place for a kid to grow up.

Professional photographer and wildlife biologist **John Ashley** set out to take what he calls a "conservation photograph" of a black-footed ferret. "I wanted an image that would help generate public interest in this rarest of Montana's native mammals," says Ashley, a longtime resident. "The challenge is that black-footed ferrets are nocturnal, so no one ever sees them. People are far less inclined to protect a species they never see."

To capture an image of a ferret in its natural nighttime surroundings, Ashley spent nine nights in below-freezing temperatures over a period of several months at UL Bend National Wildlife Refuge, 50 miles south of Malta. The image shown here, taken late one night in April, combines a shot of a curious ferret taken at high speed using a flash and a remote shutter release; a long-exposure (12-second) shot to capture the Milky Way in the background; and a third shot in which the photographer "painted" the mound around the burrow with the light of his headlamp. The sequence with three different settings was made over a span of about 45 seconds, without moving the tripod. "What you see here is what your eyes would see if you were watching a ferret after midnight in an eastern Montana prairie where they live," Ashley says. ■

OUTDOORS REPORT

1978 The year that Montana Fish and Game Department changed its name to Montana Fish, Wildlife & Parks.

41st Annual Photo Issue 2022

Thank you to the 600-plus subscribers who entered our *Montana Outdoors* 2022 Favorite Photo Contest. And congratulations to our three randomly selected winners:

Angie Meidinger (Fallon, MT)
Milky Way galaxy by **Ken Murphy**
(page 8 of the 2022 Photo Issue)

Catherine Cain (Glen, MT)
Pika by **Joel Maes**, back cover

Diane and Christopher Largent (Sanford, FL)
Barn swallows at Council Grove State Park
by **Tracy Scott** (page 32)

Each winner receives a mounted 16 x 20 print of their favorite photo.

Rosebud Battlefield State Park

STATE PARKS HERITAGE

Scientists make new finds at Rosebud Battlefield State Park

Last September, archaeologists and other research scientists searched portions of Rosebud Battlefield State Park for the collective grave of nine U.S. Army soldiers killed during this historic prelude to the Battle of the Little Bighorn. Using ground-penetrating radar and minor excavation, the scientists focused on an area thought to be the burial site but never verified with evidence.

The Rosebud Battle, part of the Great Sioux War of 1876-77, took place on June 17, 1876, in the Montana Territory between the U.S. Army and its Crow and Shoshone allies and a force of mostly Lakota Sioux and Northern Cheyenne led by Crazy Horse. The Cheyenne call it the Battle Where the Girl Saved Her Brother after an incident in which Buffalo Calf Road Woman heroically raced through gunfire to grab her brother, Comes-In-Sight, whose horse had been shot out from under him.

General George Crook's offensive was thwarted by the Indians, whose success and resolve convinced them they could prevail against the army—which they demonstrated eight days later with the stunning victory over Lieutenant Colonel George A. Custer and his soldiers at the Battle of the Little Bighorn.

Researchers were unable to find the Rosebud grave, "but we will continue to analyze the data we gathered, which may still lead us to its location," says Dr. Rachel Reckin, manager of the FWP State Parks Heritage Program.

Researchers did locate other important battlefield artifacts, including most pieces of a disassembled Model 1851 Colt Navy revolver. They also found a concentration of 53 lead bullets that "likely represents the Lakota and Cheyenne warriors shooting at General Crook's soldiers in the very first moments of the battle," Reckin says.

Lead bullets found during a recent Rosebud Battlefield archaeological survey.

Funded by the Lee and Donna Metcalf Charitable Trust, this and other archaeological work at the battlefield is being conducted by FWP in partnership with tribal officials, the State Historic Preservation Office, the U.S. Army, and faculty with Colorado Mesa University.

"One goal of these projects is to better understand the battle's precise events and their locations so we can eventually develop digital interpretive materials that would virtually walk visitors through the site with indigenous oral histories, soldiers' accounts, and archaeological findings," Reckin says. ■

Scan this QR code to watch a short video on the archaeological research at Rosebud Battlefield State Park.

CLOCKWISE FROM TOP LEFT: MIKE MORAN ILLUSTRATION; SHUTTERSTOCK; COLORADO PLATEAU COOPERATIVE ECOSYSTEM STUDIES UNIT

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WILDLIFE SCIENCE

Shiras moose no more?

What once was called a Shiras moose may actually be just a smaller version of the northwestern moose subspecies.

Nick DeCesare, FWP research biologist based in Missoula, has some startling news for fans of Montana's Shiras moose subspecies: It probably doesn't exist.

Yes, Montana is home to several thousand moose, a large, dark member of the deer family found mainly in dense mountain forests and areas rich in willows and aspen. But it appears they aren't a separate subspecies, as biologists had long assumed.

Roughly 100 years ago, moose in the U.S. Rockies were given their own name, "Shiras moose," after scientists observed differences between them and moose in Canada and Alaska. "What became known as *Alces alces shirasi* does have a notably smaller body and antler size," says DeCesare, who is leading a multi-year study on moose in western Montana.

As part of the study, FWP biologists joined their counterparts in other western states and provinces to look at whether Shiras moose, also known as Yellowstone moose, were genetically distinct. "The results indicate they likely are not," says DeCesare. The scientists tested tissue samples from 255 moose provided by hunters across the region. "Genetically speaking, moose across western North America were found to all be quite closely related, and any differences like size are probably the result of different regional climate or habitat rather than genetics. It appears that across North America, a moose is a moose."

Because of their smaller size, Shiras moose in the Lower 48 are in a distinct category of trophy records maintained by the Boone and Crockett Club. Club officials say they will continue to categorize moose records in this region with the Shiras designation because it represents a smaller size class of moose, even if that is driven by poorer quality habitat, not genetics.

The Shiras moose was named after George Shiras III, a Pennsylvania congressman and nature photographer who pioneered the use of nighttime flash photography. He was credited with the discovery of a concentration of moose at the head of Yellowstone Lake that would become the reference specimens upon which the subspecies description was based.

Most of the five deer family members in North America—white-tailed deer, mule deer, elk, caribou, and moose—have ranges divided according to "subspecies," some of which show notable differences in appearance and behavior. For example, subspecies of mule deer include Rocky Mountain mule deer, Columbian black-tailed deer, and Sitka deer. Moose are divided into four subspecies across North America: eastern, northwestern, Alaskan, and, the smallest, Shiras. The Shiras is found in Montana, surrounding states, and the lowest reaches of British Columbia and Alberta. DeCesare says Shiras moose are extremely close relatives of northwestern moose and expanded south from that subspecies' range only in the last few hundred years.

"One of the most important things we learned from the DNA study was that moose across western North America are closely related to each other, particularly compared to other species across that range, such as deer or caribou," DeCesare says. "In some respects, certain moose from Colorado were nearly genetically identical to others from British Columbia, and only subtly different from individuals as far north as Alaska."

To read the full study, which also includes information gathered from fossil records, visit fwp.mt.gov and type "Phylogeography of moose in western North America" in the search box. ■

FROM TOP: DONALD M. JONES; TOM DICKSON/*MONTANA OUTDOORS*

Not another soul in sight

Longing for those days of yore when you could fish for trout and hardly see another angler all day? They still exist. The months of March, April, and May can provide great fishing, well before the droves of tourists and weekend floaters arrive. Now is when anglers in the know sneak out and, especially on weekdays, enjoy the solitude they used to find before Montana became Big Crowd Country.

The major hatches won't be happening yet, so mostly the fishing is with nymphs or streamers. However, the Bitterroot and a few other far western rivers have March and April Skwala hatches as well as the occasional gray drake or March brown, and rainy and cloudy days will bring off hatches of blue-winged olives (*Baetis*). Keep an eye out for midge hatches anytime in spring, and caddis often start coming off in late May if the water is warm enough.

Get out there now, before the summer madness takes its toll.

Be sure to bring sunglasses, sunscreen, warm clothes, and a rain jacket. Though temperatures can reach the 70s this time of year, winterlike snowstorms can blow in out of nowhere. ■

FWP VIDEO SHOWCASE

Recent videos produced by FWP staff for social media and television

Serotinous cones

How cones of lodgepole pines and a few other conifers have adapted to opening only in searing hot temperatures, giving them a head start on other tree species after a wildfire.

Back to the Tendoys

How bighorn sheep were captured on Wild Horse Island State Park (home to some of the world's largest rams) and relocated to historical habitat in the Tendoy Mountains in Montana's southwestern corner.

Out for agates

Agate experts talk about the thrill of finding Montana moss agates at fishing access sites along the Yellowstone River, then cutting and polishing the stones to reveal patterns.

OUTDOORS JUST FOR KIDS

By Brett French. Illustration by John Potter

On the morning of October 21, 2021, visitors watching wildlife in Yellowstone National Park were amazed to see an adult grizzly bear hunting elk with the Junction Butte wolf pack.

Wolves and bears usually fight each other for food. So why did this happen?

It takes a lot of energy for a bear to follow a wolf pack running around, but the reward is high if the bear can take over the animal the wolves have killed.

A freshly killed elk is a big source of fat and protein for a bear getting ready to sleep through the winter. This bear seems to have figured out that following wolves in the morning would increase its chances of eating a good meal.

Often wolves will give up their food when a grizzly bear shows up and then wait around. Since hunting is dangerous and often unsuccessful, it's better for wolves to wait their turn rather than continue chasing another elk.

Grizzlies aren't the only animals to steal food after another animal does all of the work. Our ancient ancestors did it, too. They would chase a predator away from a freshly killed antelope or other prey. Then they'd eat it themselves. Scientists call this behavior "kleptoparasitism," or feeding by theft.

This behavior comes with some risks. Wolves will often try to scare the bear off the kill, rushing in to threaten an attack. When the bear chases one wolf off, another will sneak in to grab a bite. It can be a lot of work for both predator species.

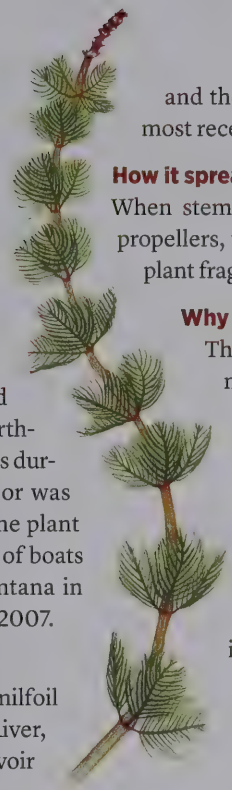
Grizzlies will even sleep on top of a dead animal to protect it from wolves, as well as from coyotes, ravens, and eagles.

Watch the wolves hunt elk by separating smaller and smaller groups from the larger herd at facebook.com/YellowstoneNPS/ (scroll down to December 15, 2021). You'll see the grizzly come in after the wolves bring down the cow elk and scare them off the kill. ■

Brett French is the outdoors editor at the Billings Gazette.
John Potter is an artist and illustrator in Red Lodge. See other "Outdoors Just for Kids" columns at billingsgazette.com.

Eurasian watermilfoil

Myriophyllum spicatum



What it is

Eurasian watermilfoil is an aquatic plant invading lakes and reservoirs across Montana. Native to Europe, Asia, and northern Africa, it was first discovered in the eastern United States during the 1940s. It likely arrived in a ship's ballast water or was imported as an aquarium or private pond ornamental. The plant spread west as fragments attached to hulls and propellers of boats transported to other waters. It was first reported in Montana in Noxon and Cabinet Gorge reservoirs (Sanders County) in 2007.

Where it exists in Montana

In addition to Noxon and Cabinet Gorge, Eurasian watermilfoil is growing in Beaver Lake (near Whitefish), the Jefferson River, the Missouri River (to Canyon Ferry), and Fort Peck Reservoir and the Missouri River downstream of Fort Peck Dam. The most recent population was found in Nilan Reservoir in 2021.

How it spreads

When stems and leaves are broken up by wave action or boat propellers, the fragments take root and form new plants. A single plant fragment can start an entirely new population.

Why we hate it

This fast-growing, rapidly spreading invasive crowds out native plants and reduces vegetation diversity. Dense mats of Eurasian watermilfoil also fill bays, clog boating channels, and surround docks, making swimming and boating impossible in some areas.

Often confused with

Eurasian watermilfoil looks a lot like northern watermilfoil, a beneficial native. Here's an ID tip: Northern watermilfoil has 5–10 leaflet pairs per leaf, while the invasive has 12–21 leaflet pairs per leaf. ■

Learn more at fwp.mt.gov/conservation/aquatic-invasive-species.

Illustration by Liz Bradford

"Cumulative Impacts"

A quick look at a concept or term commonly used in fisheries, wildlife, or state parks management.

Also known as "cumulative effects," these are the small, incremental human activities that, when combined, significantly damage fish and wildlife habitats or harm populations. While they may be insignificant in themselves, cumulative effects add up over time.

Think of it as a death by a thousand cuts.

For instance, it's illegal for a municipality or home owner to pump raw sewage into a river or stream. But Montana waters are still polluted by thousands of old septic systems that leak into groundwater or tributary streams. The cumulative effects of all these small releases can harm fish and aquatic insects.

When FWP wildlife managers review a mining proposal, they not only consider habitat that could be eliminated from the mining site itself, but also the cumulative effects of migration route disruptions and how roadways and utility corridors built to support the mine may combine to harm wildlife over time.

Another example: When landowners or communities place boulders ("riprap") on riverbanks to keep out spring floodwaters, that constricts the river and sends more water downstream. The cumulative effect of riprap installed along miles of shoreline is an increasingly powerful river that eventually blows out banks at some point downstream and causes massive flooding and property damage. It also robs floodplains upstream of silt and nutrients necessary to grow cottonwoods and other native vegetation.

The challenge in managing for cumulative impacts is that they are often hard to measure, especially the way various effects interact with each other. ■

Tons of riprap line the Yellowstone River near Laurel.

NRCS

WEST SIDE STORY

How a group of biologists and grouse devotees are returning sharptails to restored grasslands on the other side of the Continental Divide.

BY BENJAMIN ALVA POLLEY

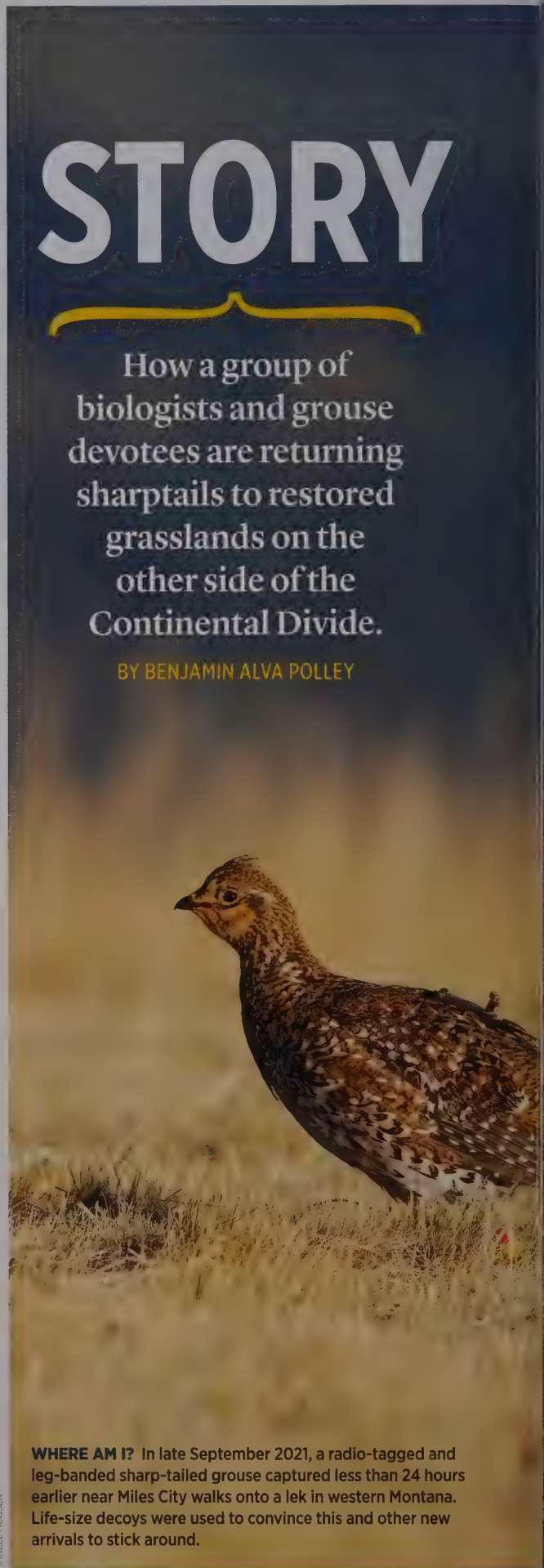
At first light, on a prairie east of Miles City, a flock of male sharp-tailed grouse sails low over badlands and lands out of sight in a stand of short tawny grass. Minutes go by before one male appears and strolls out onto this prairie dance floor. The chicken-size bird is sandy-brown and speckled white with brown chevrons on his underside. His back bows, his head with its brown crest and yellowish eyecombs dips, his wings straighten as his tail lifts. The bird's wing flight feathers rattle and shake as he struts to some internal rhythmic drumming that keeps time with the pulsing purple skin sacs on his neck. He rapidly stomps his feet up to 20 times a second, creating a purring sound, and then lets out a coo.

A dozen other bachelor birds begin dancing nearby, spinning in tight circles like feathered wind-up toys. After squaring off with the closest male, the first dancer flies up off the ground a few inches, chest-bumping and pecking his rival. "It's a singles bar where men strut their stuff," says Ben Deeble, president of the Big Sky Upland Bird Association, watching the show from a camouflaged blind.

But something is different on this lek—an open area of prairie where sharptails breed in spring and gather again in fall. Wire boxes baited with berries and lined with guiding fences toward funnels dot the site. Curious, the dominant male (the first dancer) walks into one of the traps and tries unsuccessfully to escape. Driven to compete, other males follow.

Deeble signals the capture teams, composed of FWP biologists and volunteers, who sprint from their blinds with fish nets, mesh bags, and empty cardboard boxes to capture the birds for relocation hundreds of miles away in western Montana.

This momentous event actually began several decades ago, when Montana Fish, Wildlife & Parks biologists began restoring the sharptail's grassland habitat in northwestern Montana. Years of research by FWP staff, Montana State University scientists, and sharptail devotees like Deeble, as well as an ambitious reintroduction plan, are finally bearing fruit. Whether these newly transplanted birds and future sharptails survive and repopulate historical habitats west of



WHERE AM I? In late September 2021, a radio-tagged and leg-banded sharp-tailed grouse captured less than 24 hours earlier near Miles City walks onto a lek in western Montana. Life-size decoys were used to convince this and other new arrivals to stick around.

MARCEL HUIJSER

ON THE DANCE FLOOR Sharp-tailed grouse males (tails erect) and females gather on a lek in the CMR National Wildlife Refuge. Males congregate on these open areas of grasslands and perform noisy, acrobatic mating displays meant to attract females. Restoration efforts involve reintroducing birds captured elsewhere to historical leks to reproduce and start a new population.

the Continental Divide largely depends on how well Montanans have repaired the fragmented and degraded intermountain grasslands where they once lived.

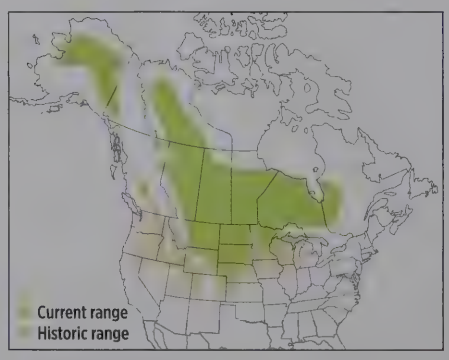
LOCALLY EXTINCT

Historical documents show that sharpies, as they're called, were once a predominant bird in the grassland valleys of western Montana. That's no longer the case.

East of the Continental Divide in Montana, sharptails are still abundant. But west of the Divide, they are the only bird species seen by Lewis and Clark as the explorers passed through the region that are no longer present. Populations steadily declined starting in the 1940s, and the birds were locally extinct by the early 2000s.

Sharptails need large contiguous tracts of grasslands. In western Montana, these were fragmented by crop conversion, livestock overgrazing, and construction of a dam that flooded thousands of acres of habitat. Adding to the birds' woes were juniper and pine trees spreading into grasslands. Once kept at bay with wildfires or fires intentionally set by American Indians to rejuvenate grasslands, the encroaching trees provide roosting sites for raptors.

But now, after three decades of planning and research, a diverse partnership is working to bring the prairie birds back to mountain valleys west of the Divide. Key to the project's success is finding habitats more hospitable than what existed when sharptails disappeared. Deeble, a project leader who has been working for more than two decades on restoring the birds to western Montana, is optimistic. "Montanans are making many of these grassland ecosystems whole again," he says.



SHRINKING RANGE Sharp-tailed grouse populations have disappeared in much of their U.S. range, especially in the Midwest and mountainous West. Grassland habitats have been lost to crop conversion, livestock overgrazing, and conifer expansions that increase raptor perching sites.

WINTER WARRIORS

Sharp-tailed grouse are denizens of shortgrass prairie and brushlands. Historically they ranged from central Alaska as far south as Death Valley, across the northern and central Great Plains, and east to the Great Lakes. The hardy species survives drought, blizzards, and blistering hot summers. In regions where most ground-nesting birds migrate south for the winter, sharptails stay put, enduring months of bitter cold and driving winds. Heavily feathered legs and toes keep the birds warm in freezing weather and allow them to walk atop deep snow.

Sharptails eat insects like grasshoppers and a wide range of prairie plants, including rose hips, yarrow, and buttercups. They feed much like chickens, pecking for bugs and seeds. They often fly into deciduous trees to soak up sunshine or escape predators.

The birds remain in family groups throughout summer, then form larger flocks in the fall. When startled by a ground predator like a coyote, sharptails flush in stag-

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DONALD M. JONES; MAP BY LUKE DURAN/*MONTANA OUTDOORS*

gered ones and twos with a rush of wings and loud *kuk-kuk-kuk-kuk* calls, showing their namesake pointed tail and white breast feathers. Strong flyers, they can cruise for a mile or more, their stiff wingbeats followed by long glides on cupped wings.

A favorite of upland bird hunters, especially those with pointing dogs, sharptails are also sought by bird watchers, especially during their lively mating season.

Males begin dancing in mid-February and continue off and on until mid-April. They conduct their mating displays longer than most birds, even dancing in the fall when females aren't present as a warmup for the real action in spring.

Male sharpies assemble at a flat, open, matted patch of shrub-free ground carpeted in short-cropped grass worn down by generations of little grouse feet. They engage in competitive displays to win female grouse hearts. In groups as large as 50—peak numbers at a lek last for about a week—males strut in a spectacular dance, an ancient ritual of flair and endurance.

The dominant males stand in the center of the lek, with others gathering in concentric circles beyond. The birds regularly square off and tussle. "Any place where a bunch of guys come together to impress girls, there's bound to be fights," says Lewis Young, a retired U.S. Forest Service wildlife biologist living in Eureka, who has worked on western Montana sharptail restoration for decades and now volunteers for the restoration project.

FWP EFFORTS

Efforts to save dwindling western Montana sharp-tailed grouse populations began after an estimated 4,000 birds were lost with the creation of Lake Koocanusa, an impoundment of the Kootenai River between Libby and Eureka, in 1972. To mitigate that and the loss of hundreds of square miles of winter habitat along the river, the federal Bonneville Power Administration provided FWP with long-term funding for grouse restoration and habitat conservation. From 1987 to 1997, biologists transported 139 birds captured in British Columbia and released them in the bunchgrass prairie of the Tobacco Valley, considered the best remaining habitat in northwestern Montana. Unfortunately, the birds didn't take. According to Tim Thier, a retired FWP wildlife biologist who worked

CAREFUL CAPTURE Bottom: Biologists and volunteers erected funnel fencing on leks in eastern Montana. When sharptails arrived at the historical dancing grounds before sunrise and began walking around, they were guided by the fencing into cages (white cloth tops). Right: The birds were then gently captured for transport to a nearby camp, where more biologists and volunteers awaited.

out of Eureka, the grouse habitat by then was too degraded by conifer encroachment and expanding housing and road development.

Though FWP used mitigation money to buy conservation easements and other sharptail habitats, new bird reintroductions stalled. A major obstacle was the long-held belief that grouse west of the Divide were the Columbian sharptail subspecies, which differs genetically from the plains subspecies east of the Divide. "Because the Columbian subspecies was disappearing elsewhere in its historic range in Canada and Washington, by the early 2000s we couldn't obtain any for reintroducing to western Montana," says Chris Hammond, an FWP wildlife biologist in Kalispell.

Then, in 2006, Deeble led a genetics study at the University of Montana Natural History Museum, taking DNA samples from museum specimens originally from west of the Divide. Researchers concluded that western Montana sharptails were historically the plains subspecies, not the Columbian. "That was huge. It meant we could look to eastern Montana for birds," Hammond says.

A PLAN FOR ACTION

FWP biologists and other scientists soon analyzed and compared sharptail habitat in eastern and western Montana. They identified three potential valleys with abundant intact grasslands protected by conservation easements: the upper Blackfoot Valley, the upper Bitterroot Valley near Florence, and a valley in the Flint Creek Range northwest of Butte.

In 2017, FWP biologists and MSU graduate students wrote "Restoration Plan for Sharp-tailed Grouse in Western Montana," which the Montana Fish and Wildlife Commission authorized two years later. The plan identifies factors influencing critical elements of grouse population dynamics such as breeding success, nesting survival, and chick survival. "Based on modeling, we can now predict how well a new population will do under various scenarios and focus reintroductions where the birds will most likely succeed," Hammond says.

It took members another two years to pull together the necessary funding and assemble enough volunteers to launch the capture and release effort. Researchers had identified healthy source populations in Prairie, Custer, and Fallon counties that

> **"Montanans are making many of these grassland ecosystems whole again."**

BACK AT THE BLACKFOOT Ben Deeble of Missoula studied the last sharptails and leks in the upper Blackfoot Valley as a graduate student in 2000. He's now helping biologists and volunteers return birds to those same sites.

EARLY SHARPTAIL OBSERVATIONS

People have observed and marveled over sharp-tailed grouse in this region of North American for hundreds or even thousands of years. Stephanie Gillin, Information and Education Program manager for the Confederated Salish and Kootenai Tribes, says a traditional story begins with a Kootenai man on a vision quest lying in an open field. When he heard singing, the man sat up, peered over the prairie grass, and observed birds dancing. He went back to his people and shared with them what he called the Chicken Dance, a combination of strutting and quick-stepping that mimicked the sharp-tailed grouse. The lively ritual is still practiced at traditional powwows on the Flathead Reservation and across other parts of the bird's native range.

Chicken dance at a Salish Kootenai College powwow.

Elsewhere the sharptail was known as "fire bird," because it thrived in grasslands rejuvenated by wildfires and prescribed fires set by Native Americans.

During the Corps of Discovery expedition, Meriwether Lewis frequently wrote of what were likely sharp-tailed grouse in his journals. In 1805, while in Oregon, he accurately described the species as "Booted, the Toes of their feet So constructed as to walk on the Snow, and the Tail Short with 2 long Stiff feathers in the middle."

The first written record of *Tympanuchus phasianellus* in what later became Montana appeared in the 1861 journals of John Keast Lord, assistant naturalist and veterinary surgeon for the British Boundary Commission, who surveyed the 49th Parallel that separates Canada and the United States. Lord reported that sharptails were "particularly abundant on the tobacco plains near the Kootenai River" near present-day Eureka. ■

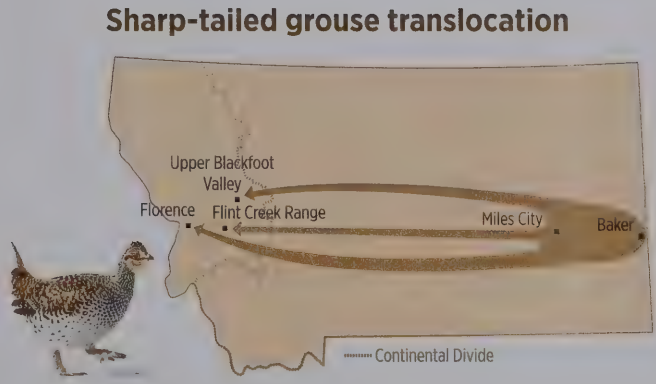
BACK OFF During the sharptail's mating dance, in early spring and again in early fall, males butt heads and peck at each other to gain dominance of the lek. One way to find the sites at dawn is to look for leaping birds as well as listen for their cooing and the rattling of shaking wing feathers.

could withstand losing, temporarily, 30 percent of their numbers (sharptails produce many young and can quickly repopulate prime habitat). The plan called for capturing then releasing 75 males in fall of 2021 (25 at each location), followed by 180 birds total of both sexes (60 at each location) trapped and transported every few years over the following decade. The total represents just 1 percent of Montana's annual hunter harvest of about 15,000 birds, Hammond says. "It's not really making a dent in the eastern Montana population, while contributing enormously west of the Divide."

The restoration work is paid for by FWP's Wildlife Mitigation Program (the Bonneville Power Administration funding) and private money, mainly from the MPG Ranch near Florence in the Bitterroot Valley, one of the release sites west of the Divide.

HEALTHIER GRASSLANDS

What's different about the habitat at the western release sites today from 30 or 40 years ago, when sharptails were disappearing? "The main thing is that more ranchers have changed grazing practices, such as using rest-rotation grazing, and they are protecting shrubby areas from cattle," Hammond explains. "That keeps sharptail habitat healthy while increasing grass production for cattle." Bolstering that private land stewardship is more public funding from the Natural Resources Conservation Service and other federal agencies to help landowners protect and restore sharptail and other wildlife habitat.



In September and October 2021, grouse were moved from source populations in Prairie, Custer, and Fallon counties in eastern Montana to areas of restored and protected grasslands west of the Continental Divide. Additional relocations will be done over the next several years.

In October 2021, at various capture sites in southeastern Montana, project team members removed sharptails from the wire cage traps and trucked them to a nearby camp. There, biologists and volunteers gathered in a wall tent to sex, age, and weigh the birds before inspecting them for injuries and taking blood samples. They secured leg bands on the grouse for later identification and fitted each with a small transmitter backpack to track after release.

Thier, who drove from Eureka to help Young and other volunteers with a second round of captures near Baker, grew emotional during the operation. "It was overwhelming. I felt privileged to be part of something I'd been working toward all these years," he says. The birds were then driven nine hours west in an air-conditioned vehicle, over the Divide, to where another team waited for the new arrivals.

CLOCKWISE FROM TOP LEFT: MONTANA FWP; GARY KRAMER; ALYSSA KELLY/CHAR-KOOSTA NEWS

BRING THEM BACK

Deeble was there, in the upper Blackfoot Valley, where in 2000 he did his graduate work studying the last of the region's native sharptails. As he sat in a truck in the predawn darkness, distant coyotes broke the silence with yelps and a great-horned owl hooted from afar. A faint light shone from a far-off cattle ranch.

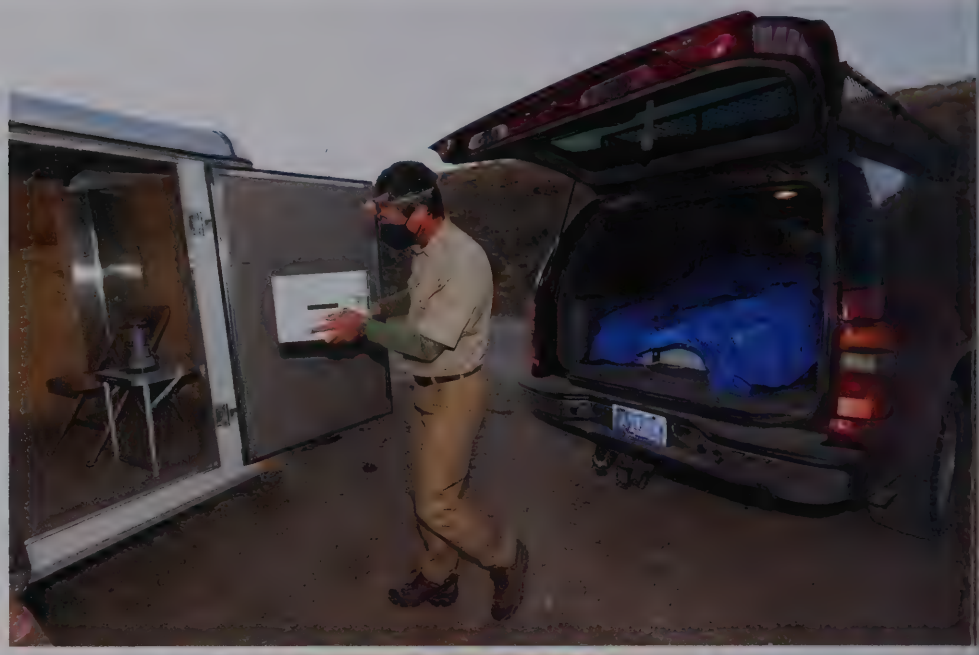
Soon team members began to broadcast recorded sharptail cackles and coos from speakers hidden behind 10 life-size decoys, set up on western Montana's last active sharptail lek, documented by Deeble 21 years earlier. He and others held nylon cords strung

> "I am helping others who have the same vision bring these birds back to this landscape. I feel a lot of gratitude."

to the doors of wooden boxes holding the live birds that had been captured 500 miles to the east less than 24 hours earlier. The recordings were meant to reassure the new arrivals and keep them from flying off to areas where they would have less chance of surviving.

Shortly before dawn, team members began pulling the cords every few minutes, releasing another sharptail into its new environment. Despite the recordings and the decoy "welcoming committee," a few new arrivals immediately flew off into the waning darkness. But others cautiously stepped onto the lek, which could be, this coming spring, a place to dance and mate and begin a new generation of western Montana birds.

Deeble choked up, tears gathering in his eyes. More than two decades after he feared Blackfoot Valley sharptails were gone for good, he's been a key partner in what could be a long-term restoration of both the birds and their grassland habitat. "A lot of people want to see the landscape restored," he says. "This week, I am helping others who have the same vision bring these birds back to this landscape. I feel a lot of gratitude."



THE DAY BEFORE
Top to bottom: At a western Montana release site, a biologist carries a grouse captured earlier that day in eastern Montana to a trailer for a final checkup. The birds are fitted with leg bands and a radio transmitter then placed in a box for release early the next morning. Volunteers, Montana State University graduate students, and FWP biologists helped with the captures and releases, done at three sites west of the Continental Divide.

Top left: Volunteers set up decoys on a western Montana lek. Top right: Empty release boxes await grouse that will be placed inside before dawn the next morning, when they are opened remotely with long cords. Right: At night before the release, a volunteer sprinkles berries on the ground and sets up speakers to broadcast grouse calls. The food, recordings, and decoys are meant to convince released sharptails to stay at the lek area rather than fly off to degraded habitats where survival would be less likely.

THE BIG DAY Below right: Photographed with an infrared camera, a cautious sharpie emerges onto its new home ground. Below left: Later that morning, another bird examines the surroundings. Left: Biologists are now tracking the sharptails to see if the birds stay in the release area.

Stymied

A grizzly's blocked journey highlights the need for more wildlife road crossings.

By Jim Pashby

YOUNG AND RESTLESS Number 11072847, a juvenile male grizzly, was photographed by a camera trap in the Sapphire Range in June 2021 during a U.S. Fish & Wildlife Service hair snare DNA study.

A wide-ranging male grizzly bear that tried unsuccessfully to cross Interstate 90 northwest of Deer Lodge nearly 50 times has demonstrated what wildlife biologists have known for years: Freeways are major barriers that impede bears and other wildlife from reaching food or moving between seasonal habitats.

In some cases, busy transportation corridors also stymie wide-ranging movements that lead to essential genetic mixing and population health. "Bear populations that exchange individuals are more resilient because they can maintain genetic diversity, adapt to changing conditions, and recover from threats like fire or disease," says Cecily Costello, FWP bear biologist in Kalispell. For decades, the isolated grizzly populations in the lower 48 states had little opportunity for interchange. "But recent population growth has increased the likelihood of successful movements between ecosystems—if the bears can find a way to get there," Costello says.

The biologist explains that the grizzly blocked by I-90 was a sub-adult that had left its mother. Most juvenile male bears embark on wide-ranging movements to find a new home, known as "natal dispersal," while females generally stay fairly close to their mother's range. "Having evolved to separate males from their female kin and reduce inbreeding, these dispersal movements also provide the best hope for population connectivity," Costello says.

How does the bear cross the road?

Our notable wanderer, who likely was born in 2016, left his natal range in the Mission Mountains and by 2020 reached an area south of I-90 in the Flint Creek Range. There, he got into trouble by raiding a bird feeder and then, a few days later, killing domestic ducks at a private home south of Gold Creek, between Deer Lodge and Drummond.

"That area is outside of current grizzly bear distribution, so many landowners aren't aware of how important it is to keep food attractants away from bears," says FWP bear specialist Rory Trimbo, who is based in Anaconda. In October 2020, he trapped and radio-collared the 360-pound male, officially known as number 11072847, and relocated it to the edge of the Scapegoat Wilderness north of Lincoln. The grizzly stayed only a few weeks before heading south again.

Costello mapped the bear's GPS locations and was struck by what she saw (see map at right). "Over 29 days in fall of 2020 and 24 days in spring of 2021, he appeared to have attempted to cross Interstate 90 at least 46 times," she says. The bear finally made it past the freeway in early May 2021, "probably by walking or even swimming under a set of highway and railroad bridges crossing

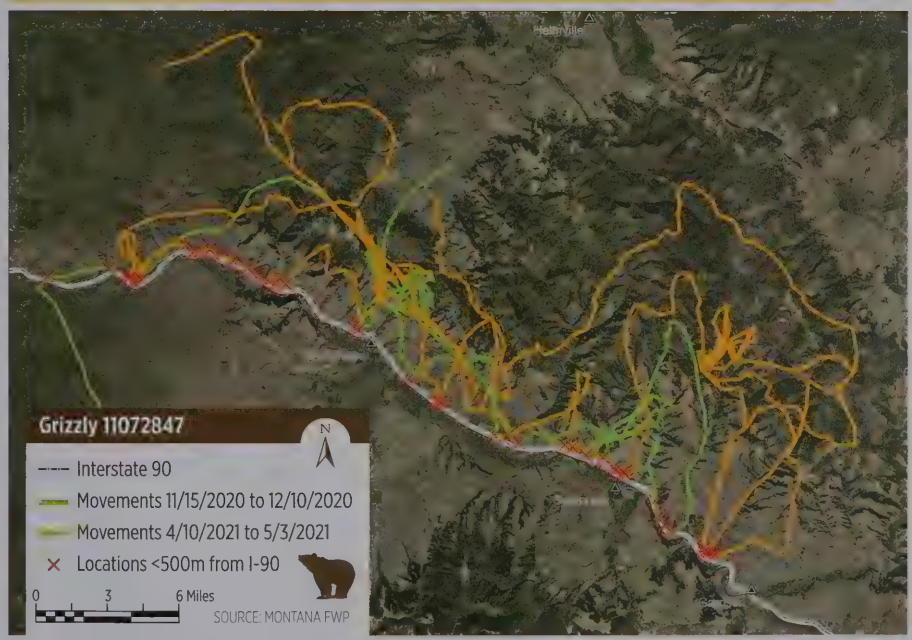
Jim Pashby is a writer in Helena.

the Clark Fork River," Costello says.

Except for a brief excursion to the Sapphire Range, the bear stayed around the Flint Creek Range for the rest of 2021 and made no attempts to cross back north of I-90. "His fidelity to this area may indicate he selected it as his new home and had concluded his dispersal movement before being captured," Costello says. "This would explain his persistent attempts to get south of the interstate."

Finding unobstructed pathways between ecosystems is difficult enough for grizzly bears due to increased housing and other development. "Freeways add an additional challenge with their high-traffic volumes," Costello says. Verified sightings of a few grizzlies west of I-90 and I-15 in western Montana show that bears have managed to negotiate interstates, "but the GPS data from this individual has given us insight into just how hard it can be," Costello adds.

BLOCKAGE FOR BEARS Increasing traffic on Montana freeways (like this stretch of I-90 near Bozeman) thwarts grizzly movement as bears expand from core habitats in and around Glacier and Yellowstone national parks. The map below shows the movement of one male grizzly in the fall of 2020 and spring of 2021 as it repeatedly tried to cross I-90 near Drummond but was stymied by cars and trucks speeding past.



Safety for bears—and drivers

Lauri Hanauska-Brown, a senior FWP wildlife manager in Helena, says number 11072874's journey shows the importance of finding ways for grizzlies and other wildlife to cross freeways. "If we want to maintain the connectivity essential for healthy populations, we need to create passages at key crossings," she says. According to FWP records, about a half-dozen grizzlies are killed in vehicle and train collisions per year in Montana.

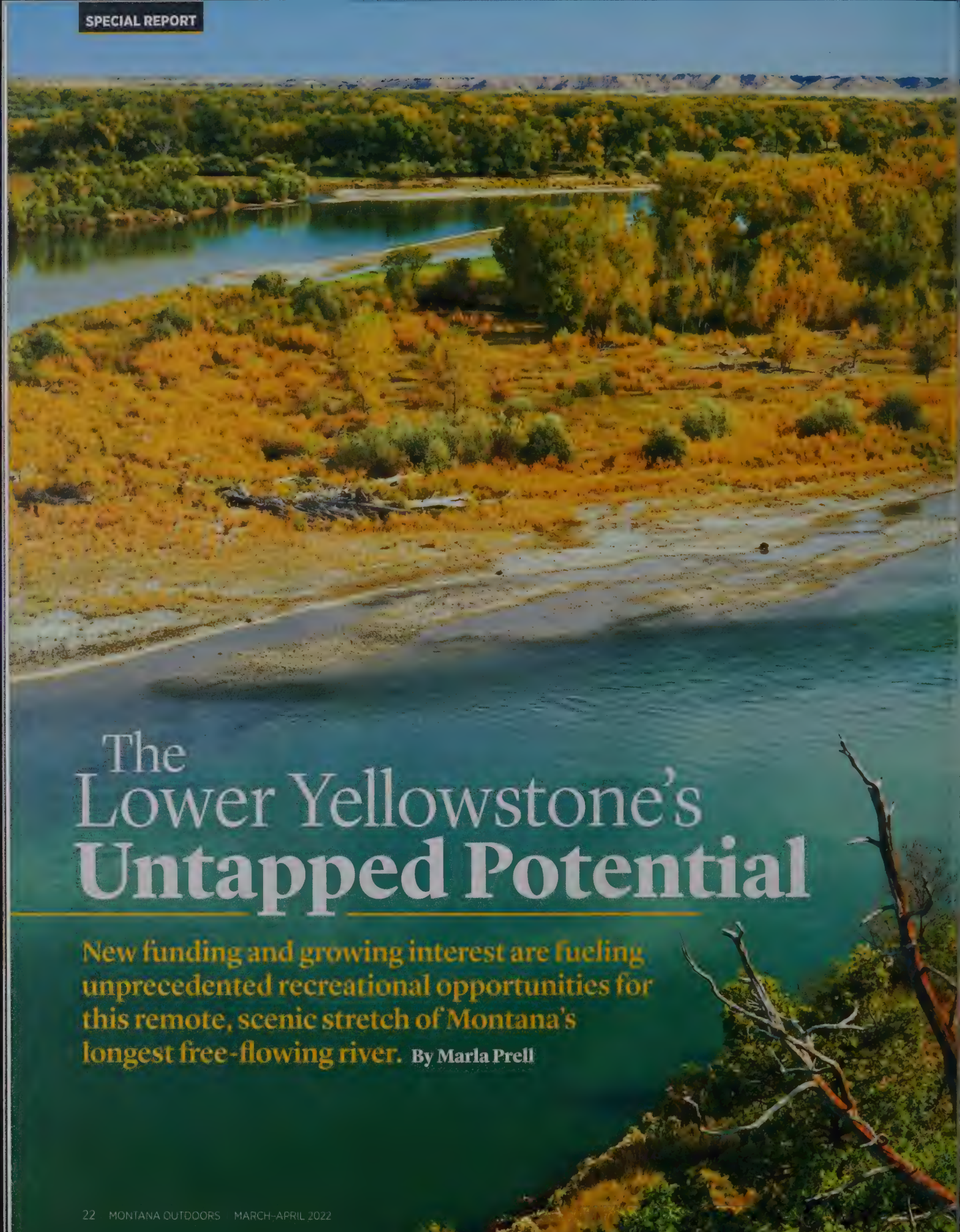
> "Over 29 days in fall of 2020 and 24 days in spring of 2021, he appeared to have **attempted to cross Interstate 90 at least 46 times.**"

Hanauska-Brown says effective crossings have been built on the Trans-Canada Highway in Banff National Park and on U.S. Highway 93 on the Flathead Indian Reservation in western Montana. "Bears and other wildlife regularly use these and other over- and underpasses" she says.

Hanauska-Brown adds that Montana may soon have opportunities to build similar structures thanks to the federal Infrastructure Investment and Jobs Act passed in late 2021. "The legislation contains hundreds of millions of dollars for states to install structures for wildlife passage that reduce collisions between wildlife and vehicles while improving habitat connectivity, with more than half of the funding going to rural areas," she says. "Right now we're working with partners like the Montana Department of Transportation to determine our highest-priority projects."

In time, Hanauska-Brown adds, bears like number 11072847 might be able make their way from one ecosystem to another more easily, while reducing dangerous traffic hazards. "We need safe freeways, but we also need pathways for wildlife to move. We're looking for solutions to have both."

LEFT TO RIGHT: USFWS; CADE DURAN



The Lower Yellowstone's Untapped Potential

New funding and growing interest are fueling unprecedented recreational opportunities for this remote, scenic stretch of Montana's longest free-flowing river. By Marla Prell

THE GLORIOUS ROCHE JAUNE Blue skies, abundant sunshine, and stunning scenery show why the lower Yellowstone River, pictured here near Rosebud, is such an attraction. Local leaders are working to find ways to bring more visitors to the river—and more tourism dollars to nearby communities.

PHOTO BY CARLY MING

For years, southeastern Montana's lower Yellowstone River has been one of the state's last great recreational secrets. Stretching 175 miles downstream from the Bighorn River confluence, Montana's longest free-flowing river glides past scenic limestone bluffs, towering cottonwoods, rugged badlands, and vast stretches of prairie little changed from when Captain William Clark and his men traveled here more than two centuries ago. The area's relatively few kayakers and canoeists often see more deer, mink, otters, and beavers than other floaters. Dozens of bird species use the riparian habitats, including chattering belted kingfishers that keep paddlers company as bald eagles and ospreys soar overhead.

Surrounding lands beckon visitors with Native American cultural sites, battlefields from the Indian Wars, and world-renowned paleontology digs. And the fishing! Catch rates for smallmouth bass, sauger, northern pike, walleye, shovelnose sturgeon, and channel catfish are so good that some anglers swear an oath of silence.

Now the lid has been lifted on the river that 19th-century French trappers named Roche Jaune ("Yellow Rock," for its abundant chalky bluffs). And the spotlight isn't only on what the river and surrounding lands offer today, but also the additional recreation—cycling and hiking trails, interpretive routes, improved campsites, and additional river access—they could provide in the future.

The 2021 Montana Legislature kicked things off by approving an initial $4 million investment by FWP into the lower Yellowstone River corridor to bolster the river's wildlife habitat and water access. Then, this past year, a new regional citizen committee provided FWP with carefully considered guidance and recommendations.

Local businesses and supporters are thrilled with the new attention. "It's so great to see more focus on this other part of Montana and all we have to offer," says Mandy Hoffman of Glendive, who manages a river floating guide business with her husband Justin, a member of the Lower Yellowstone River Corridor Advisory Committee. Adds Joel Krautter of Sidney, an attorney, former legislator, and committee member, "Western Montana has made investments into public access and state parks and trails, but eastern Montana's natural beauty and opportunities have been overlooked. That's changing now."

Yet even with the infusion of money and energy, adding outdoor recreation amenities may be as challenging as canoeing the big river during its frequent windy spells. Ironically, the biggest challenge could be the Yellowstone itself. In spring the river can swell with massive runoff that carries mobile-home-size ice floes able to wipe out boat ramps, pit latrines, campsites, and parking areas. "We definitely need new recreational infrastructure in this region," says Brad Schmitz, FWP regional supervisor in Miles City. "But we need to be mindful of appropriately placing it where it doesn't get washed away."

Rapid report

Both the river's vast recreational potential and possible hazards were on the minds of committee members when they met throughout much of 2021. Representing agricultural, recreational, conservation, and economic interests, the 12-member group was sponsored by Governor Greg Gianforte and convened by FWP to help the department determine the most effective way to spend the funding authorized during the last legislative session. Several committee members came from the Lower Yellowstone River Coalition, an earlier group of regional community leaders and recreation advocates who promoted the river's economic potential.

The new committee's main task was to develop a way for FWP to evaluate opportunities to acquire additional public river access. Members were also asked to identify where the state could invest in protecting critical wildlife habitats while still enhancing water access and recreation.

FWP director Hank Worsech says it was

ICE BULLDOZERS
A challenge for any effort to add boat ramps and other amenities along the lower Yellowstone is the river's destructive power during winter and spring.

Marla Prell is the FWP regional Communication and Education Program manager in Miles City.

HOOKED ON FISHING Anglers use ocean surf-casting rods and large treble hooks to catch prehistoric paddlefish below Intake, one of several diversion dams on the lower Yellowstone. The river also offers top-notch angling for smallmouth bass, sauger, northern pike, walleye, and channel catfish.

important to maintain continuity with the previous lower Yellowstone coalition so that recommendations for spending the $4 million and managing the recreation corridor represented local concerns and aspirations. "I didn't want our department to just go out and buy a few river access sites and call it a day," he says. "I wanted to see the committee's vision for their region of Montana."

FWP officials and committee members agree that the most pressing recreational needs are access sites in key areas along the river (see map, pages 26-27). Though the lower Yellowstone currently contains more than a dozen access areas—most of them at FWP fishing access sites (FAS)—several stretches contain access gaps of 19 to 41 miles. That means most canoeists and kayakers, who can paddle only 10 to 15 miles in a day, can't use those portions of the river.

Committee members visited or evaluated 20 sites along the corridor, talking with landowners and community leaders. They identified two dozen existing or potential opportunities for public access and habitat conservation. Members then developed criteria to rank water access sites and produced a 20-page report, "Recommendations for Improving Public Access, Habitat Conservation, and Management of the Lower Yellowstone River Corridor."

FWP has the final say on considering, accepting, and carrying out any of the recommendations, and that process will be subject to public review.

One recommendation is to manage the entire lower Yellowstone as a single entity while highlighting the unique amenities and history of its three separate zones: the Bighorn River confluence to Miles City, Miles City to Glendive, and Glendive to the North Dakota border near Sidney. To protect and interpret historical sites, the report suggests developing a Lower Yellowstone River State Park containing anchor destinations in each of the three zones. Modeled after the multi-unit Flathead Lake State Park in western Montana, the new park could have potential units at Myers Bridge/Howrey Island (near Hysham), Powder River Depot (near Terry), and Intake Dam FAS (near Glendive).

> "We've never had all these pieces line up before. I think we're on a wave, so we'd better ride it as long as possible."

Powder River Depot in particular is a historical gem. Now managed by the Bureau of Land Management, it's the site of military activities before and after the Battle of the Little Bighorn, as well as stagecoach traffic, steamboat landings, and frontier trade (see sidebar, page 29).

Committee members also advocated for installing river safety warnings; increasing accessibility for people with disabilities; and posting signs and kiosks with historical, agricultural, tribal, cultural, geological, and environmental information.

In addition, they recommended creating hiking, biking, and water-based trails for their health benefits and potential to boost local economies. The report specifically calls for purchasing, from willing landowners, four parcels along the stretches with limited river access for new public access sites. "It would be a dream come true just to get those four properties," says Angie Grove, former chair of the Montana State Parks and Recreation Board and current chair of the Lower Yellowstone committee.

Schmitz agrees, noting that FWP has been trying for two decades to increase access on the lower Yellowstone. "We've never had all these pieces line up before," he says. "I think we're on a wave, so we'd better ride it as long as possible."

Worsech reviewed the report in November 2021, and just a week later authorized FWP staff to look into purchasing recommended access sites.

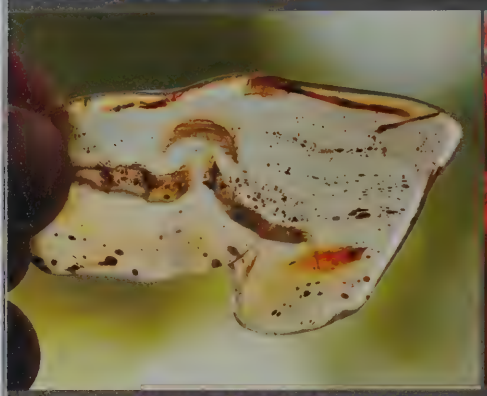
Economic possibilities

Committee members spent much of their time discussing the potential for recreation to boost and diversify the region's agriculture-based economy. Members heard from Christine Whitlatch, former director of the Glendive Chamber of Commerce, who a year earlier led the Lower Yellowstone River Coalition. "There's a huge level of excitement here over finally sharing the beauty of Montana's prairie and expanding a vision of the state that goes beyond just ski hills and mountains," Whitlatch says.

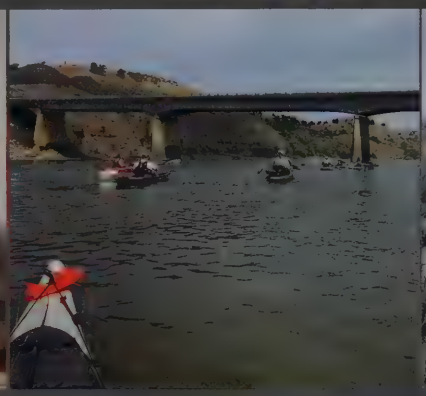
Committee member Brenda Maas, marketing director for Visit Southeast Montana,

Continued on page 28.

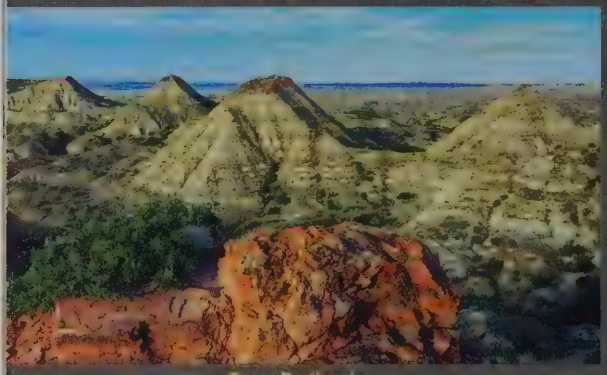
TOP TO BOTTOM: JANIE OSBORNE; NATHAN COOPER


Montana Moss Agate

Paddlefish


Kayaking

Evelyn Cameron


Terry Badlands

Smallmouth Bass

LOWER YELLOWSTONE RIVER

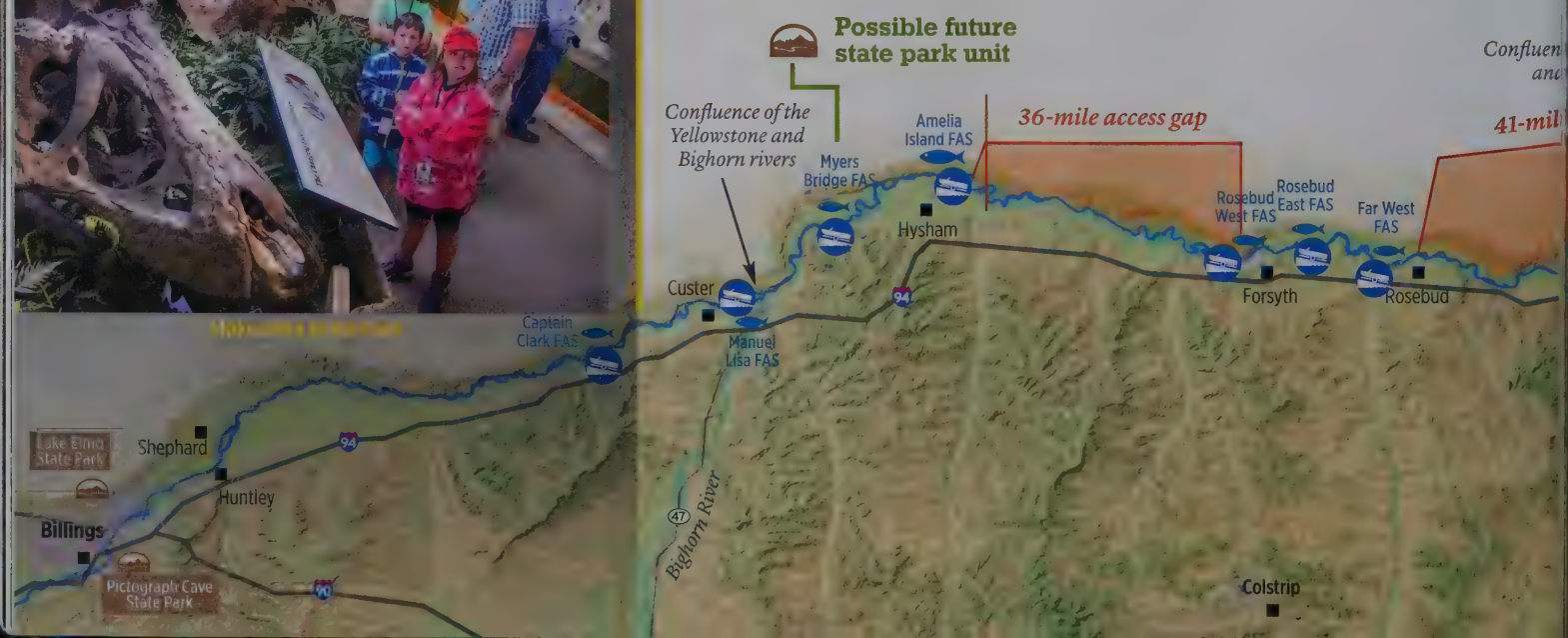
Existing and potential recr one of Montana's last best

HERE AND NOW

The lower Yellowstone River is one of the Treasure State's best-kept secrets. Th of solitude for canoeists and kayakers; great fishing for bass, sauger, northe containing stunning Montana moss agates; and scenery little changed from whe The surrounding region includes vast prairies, historic battlefields, Native Ame paleontology digs, as well as pronghorn, mule and white-tailed deer, wild tu songbirds, and other wildlife on vast public lands open for wildlife watching

DREAMING BIG

Yellowstone River advocates and local boosters envision a wide range of possi recreational improvements to make the waterway even more attractive to visi river access sites at key gaps between existing sites (see red zones in map belo In addition, local and regional coalitions and committees have identified these enhancements: improving boat ramps, roads, camping opportunities, and wa supplies at several existing access sites; establishing portage trails around diversion dams; building hiking and cycling trails with interpretive signs and information kiosks; and even developing visitor centers.



alypso Bridge

Bald Eagles

PHOTO CREDITS, CLOCKWISE FROM BOTTOM LEFT: JOHN WARNER; NATHAN COOPER; JOHN LAMBING; JEREMIE HOLLMAN; JEREMIE HOLLMAN; MONTANA FWP; MONTANA HISTORICAL SOCIETY; USGS; RODNEY SCHLECHT

eation amenities in places

nimpounded warmwater river offers vast stretches ike, paddlefish, and other species; gravel bars aptain William Clark traveled these waters. n cultural sites, and world-renowned ys, sharp-tailed grouse, raptors, hunting.

infrastructure and . Foremost are nd at right). sible

Culbertson
Bainville
Missouri River
Confluence of the Yellowstone and Missouri rivers
Fairview
Richland Park Boat Ramp
Diamond Willow FAS
Sidney Bridge FAS
Sidney
Gartside Reservoir FAS
Seven Sisters FAS
Elk Island FAS
Savage
MONTANA
NORTH DAKOTA
19-mile access gap
Possible future state park unit
Intake Dam FAS
Stipek FAS
Glendive Community Ramp
Black Bridge FAS
Glendive
31-mile access gap
Makoshika State Park
Frontier Gateway Museum
Big Sky Backcountry Byway
Terry Badlands Wilderness Study Area
Fallon Bridge FAS
Calypso Bridge
Confluence of the Yellowstone and Powder rivers
Terry
Fallon
Powder River Depot
Possible future state park unit
Bonfield FAS
Kinsey Bridge FAS
Kinsey
Roche Jaune FAS
Powder River
Pirogue Island State Park
Miles City
Tongue River
Medicine Rocks State Park
Carter County Museum

THE LOWER YELLOWSTONE
VISITORS WELCOME!

FWP Fishing Access Site (with boat ramp)
Boat ramp managed by another agency or entity
Montana state park
Prehistoric attractions

ILLUSTRATED MAP BY LUKE DURAN/MONTANA OUTDOORS

LAST LONELY PLACE The lower Yellowstone, shown here flowing through badlands near Fallon, provides floaters, anglers, and others with solitude that's becoming increasingly rare in Montana. A major challenge for those boosting the river's recreational potential is finding ways to also preserve what makes the river and surrounding region so pleasurable today.

Continued from page 25.

says more boat ramps, especially, are key to the region's recreation-based economic growth. "The reason the lower Yellowstone is not more of a destination is directly related to the inability of visitors to access the river," she says. "The time is right for this project—the new funding, the growing interest in outdoor recreation created by the pandemic. Residents and visitors want to be outdoors and have more access to public lands and waters."

Stewardship, too, is part of the economic vision. "Data and economic research show us that places that care for their public lands and waters and invest in their recreation infrastructure have the chance to achieve greater prosperity than those that do not," Lance Kalfell, committee member, rancher, and chair of the Prairie County Economic Development Council wrote in a summer 2021 *Billings Gazette* opinion piece.

Major challenges

Despite their excitement over the region's potential recreational and economic growth, committee members also recognized some sobering challenges to making the lower Yellowstone anything like a Madison River or upper Yellowstone River tourist magnet. Increased visitation will mean more money streaming into the region, but it also means more people. "Members want to share their region with others, but they still want the solitude and space they treasure," Grove says. "We talked a lot about maintaining that balance."

Jamie Hould, FWP regional Fishing Access Site Program manager in Miles City, echoes that desire. "I hope that, at the end of this process of creating more water access, a person who wanted to get lost on the river still could."

Another challenge is acquiring and maintaining access to one of the state's most powerful rivers. During some winters, ice formations over 10 feet tall flow down the Yellowstone, tearing out concrete boat ramps, fences, and pit toilets like bulldozers.

Then there's the fact that when an ideal public access spot is identified—one less prone to flood damage and between two existing access sites—the landowner may not want to sell. And even with willing sellers, the time it takes for the state to complete an acquisition can be too long for landowners receiving other offers. "We've lost a half-dozen opportunities over the years because of those delays," Schmitz says.

That's another reason the FWP regional supervisor is excited about the new access possibilities. "We can't let them slip by. They might not come back for another 25 years," Schmitz says.

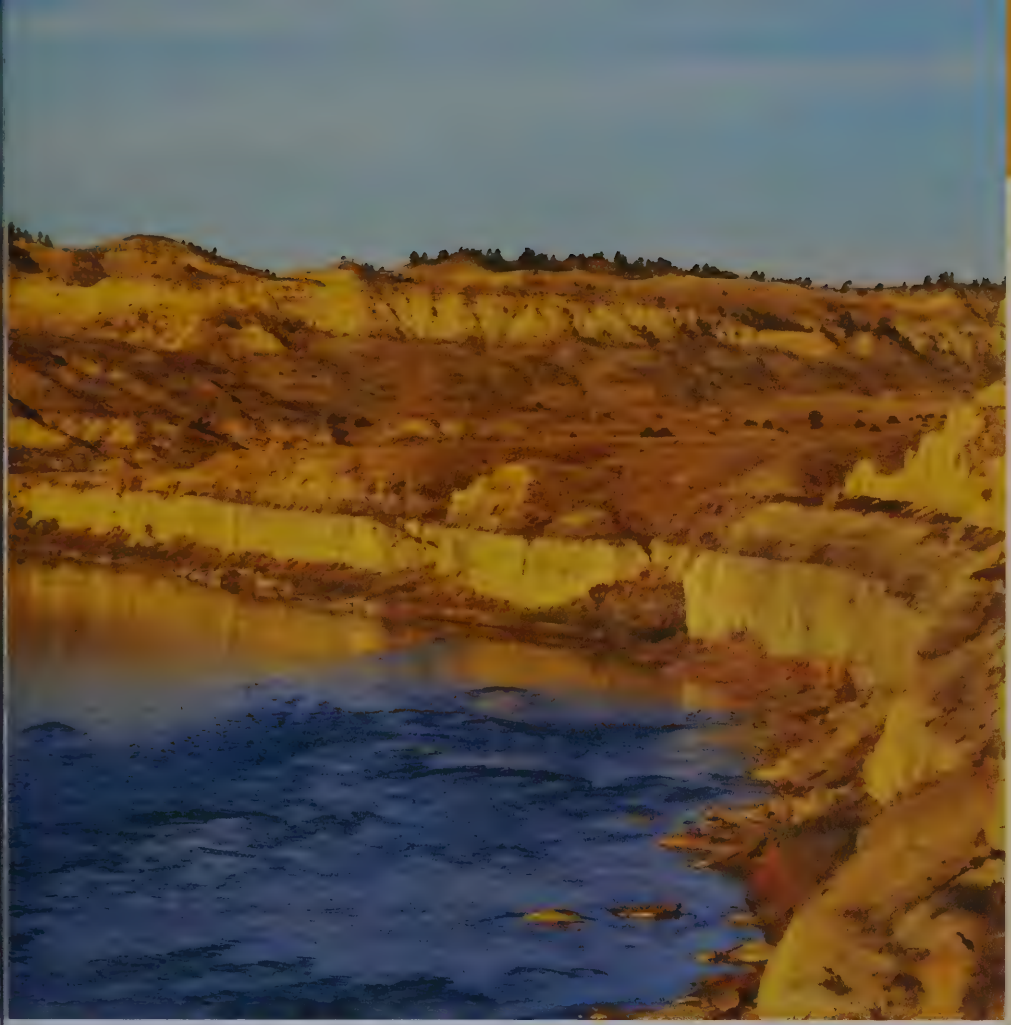
People take to the river

Like so many other outdoor recreation destinations, the lower Yellowstone saw a flood of new visitors during the past two summers. "We were not prepared for the amount of interest we received about floating the river," float guide business co-owner Mandy Hoffman says. "The Travel Channel called, bloggers called."

According to Schmitz, FWP boat ramps in the region received more use in 2021 than ever before. "We sense an increase of anglers and boaters on the horizon, and we need the infrastructure in place to handle it," he says.

Duncan Bartholomew, president of the Miles City chapter of Walleyes Unlimited,

TOP TO BOTTOM: JOHN LAMBING; ABC FOX MONTANA; MONTANA FWP



A sandy beach near Miles City

says he and other chapter members experience the burgeoning number of floaters and anglers firsthand. "We're on the river all the time and see not only the growing interest but also the need for additional access—especially for families," he says.

FWP deputy director Dustin Temple is well aware of the access deficiences. He has family in the Glendive area, enjoys fishing the lower Yellowstone, and was instrumental in helping FWP get legislative authorization for using department funds to boost access and wildlife habitat. Temple stresses that building new boat ramps and other amenities won't happen overnight, "but we're hoping to put pieces on the ground in the coming year, and over time leverage additional funds to stretch the dollars we do have," he says.

Grove says she's thrilled that FWP is moving quickly to acquire the four properties, but she's not afraid to dream even bigger. Like Temple, she wants to help attract additional funding to realize more of the committee's recommendations, such as establishing a lower Yellowstone River heritage state park. Grove also anticipates more landowners coming forward, which could open new possibilities for public access. "That's one of the many advantages of a local advisory committee—neighbors talking to neighbors," she says.

Inspired by the momentum, Schmitz hopes that new access sites will engender even more legislative support. "If we can show legislators we're accomplishing what they asked us to do, that there's an access site or two on the ground with more coming, then that could inspire even greater interest," he says. "Because there's sure a desire from the public, the committee, the governor, and our director to do a lot more out here."

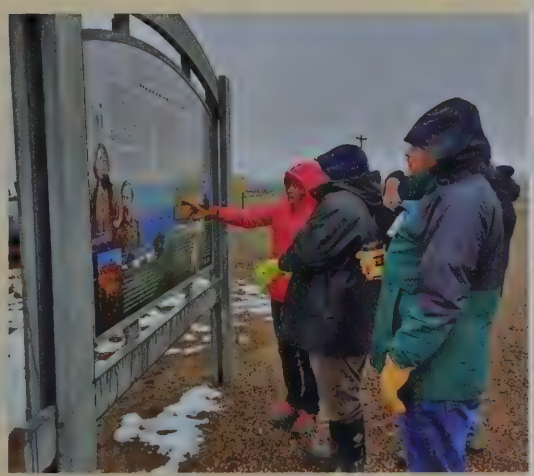
Powder River Depot

Located near the confluence of the Yellowstone and Powder rivers, the historic Powder River Depot could someday be part of a Montana state park. Lower Yellowstone advisory committee members envision it as one unit of a three-unit heritage state park with camping facilities, trails, and an interpretive center.

It's an ideal place for cultural and historical interpretation. The scenic area was the site of Native American encampments for centuries, military activities during the Great Sioux War of 1866-67, fur trapper trade, and pioneer movement. A gravel road off West Old Highway 10 leads to the site, southwest of Terry, where an ornate iron fence with silhouettes of buffalo hunters surrounds graves from the late 1800s. Interpretive signs share tales of frontier people who traveled these lands and waters, including Captain William Clark, fur traders, missionaries, cattlemen, and railroaders.

Brigadier General George Crook and General Alfred Terry established military camps here. Visible across the river is Sheridan Butte, used by soldiers for signaling. It is named for General Philip Henry Sheridan, who went on to become general in chief of the U.S. Army. Sheridan is said to have climbed the butte to watch for the arrival of his subordinate, Lieutenant Colonel George Armstrong Custer. Not long after, Custer met his fate at the Little Bighorn.

In addition to all that history, vast wildlife-rich state and federal lands surrounding the site could expand a new state park's recreational offerings. As could the Terry Badlands Wilderness Study Area's extensive trails and scenic outlooks, and the Evelyn Cameron Heritage Center in nearby Terry, which highlights the celebrated frontier photographer.



Angie Grove, chair of the Lower Yellowstone River Advisory Committee (pink coat), discusses the Powder River Depot's rich history with other committee members.

Surviving a Prairie Ocean Adventure

How to get to, camp at, fish on, and return from a Fort Peck Reservoir angling expedition—and live to tell about it.

By Bill Schneider. Illustrations by Ed Jenne

"**Why do I love** this place?" I asked myself while standing chest deep in water, trying to keep my boat from slamming sideways onto the shore as I gasped for breath between 6-foot waves crashing over my head. "It's certainly not loving me back today."

This is what can happen on Fort Peck Reservoir when you make a bad decision, as I did that afternoon. It was our last day, and my friends and I decided to beach the boat while we cleaned fish, so we could dump the entrails in deep water before taking out. I saw the thunderstorm coming, but never imagined it could nail us with 70-mph winds (gusting to 90 mph, I later learned.)

An hour later, my boat barely saved, I chided myself for a rookie mistake. I've fished Fort Peck for 12 years, six or seven weeks per year, and the catching rarely disappoints. Good fishing usually attracts hordes of anglers, but even though I see a few more boats launching every year, the pressure can be minuscule, especially on weekdays, considering the size of the reservoir (245,000 acres, twice the size of Flathead Lake) or the heavy use that's common on more-accessible warmwater fisheries. Hard to imagine, but Fort Peck Reservoir, or "Peck" to local anglers, is 134 miles long and has 1,520 miles of shoreline, more than the entire West Coast (California, Oregon, and Washington combined). Hence, the apropos moniker, the Prairie Ocean.

Most anglers target walleye, but the reservoir also has excellent fishing for northern pike, smallmouth bass, crappies, channel catfish, lake trout, and even chinook salmon. Peck is an incredibly productive and diverse fishery with 47

Bill Schneider, editor of Montana Outdoors *from 1970-78, co-founder of FalconGuides, and the author of 20 guidebooks, lives in Helena. Ed Jenne is an illustrator in Missoula.*

THE WEATHER

species of game and nongame fish.

So why aren't campgrounds and boat ramps crowded with anglers eager to take advantage of all this great fishing? To put it mildly, Peck has a well-deserved reputation as a tough place to fish, with difficult and remote access, limited campground amenities, almost no cell service, and dangerously foul weather. It takes an entire day to get there from most places, including a couple of hours on bumpy, unpaved roads, and there's often no way to get help, services, or supplies.

Obviously, Peck is not for everybody. It's mainly used by serious anglers with serious fishing boats. You don't get up in the morning and decide to go to Peck on a whim. You spend days preparing like you're going on an expedition, which you are. You must be self-reliant and bring everything you need because you can't run down to the store for something you forgot. You need a back-up for everything important, along with the tools and know-how to fix things that will inevitably break.

In spring and throughout summer, expect a major thunderstorm or two. While fishing, stay on red alert for incoming storms

★

Despite the challenges, many anglers want to try Peck but aren't sure what to expect or how to prepare. Here's what you need to know for your first expedition:

MANAGEMENT

The U.S. Army Corps of Engineers manages most access points and campgrounds. Montana Fish, Wildlife & Parks manages fishing access sites (FASes) at Duck Creek and Rock Creek. Management of the Hell Creek recreation area is transitioning to the Little Shell Tribe. The U.S. Fish & Wildlife Service manages the Charles M. Russell National Wildlife Refuge, which surrounds the reservoir.

GUMBO

If you don't know about gumbo, read up on it before heading for Peck. This clay-rich soil is everywhere, and it's as slick as oil on glass when wet. It sticks to everything and is difficult to remove. A soaking rain can turn access roads, even those with significant

gravel, into endless quagmires. Roads often become impassable, even for rigs not towing anything, but especially for those pulling trailers or fifth-wheelers. Anglers sometimes have to leave their campers and boats and return days later to retrieve them.

Tip: Bring an extra pair of shoes or sandals to wear in the boat so you can keep gumbo out of it.

BOAT ACCESS

Given its size, you'd think Fort Peck would have lots of public access. But because the area is so remote and sites are so hard to maintain, the reservoir has only two main public access points: Fort Peck West, near the dam in the town of Fort Peck, and Hell Creek, on the south shore straight north of Jordan. There are even more-remote ramps at Nelson Creek, Rock Creek Marina, Rock Creek FAS, Duck Creek FAS, the Pines, Bone Trail, Devil's Creek, Fourchette Bay, and Crooked Creek. Devils Creek (no dock) and Bone Trail are rarely used because they're small, are far off the beaten path, and have long, rough, gumbo access roads.

Tip: Bring a day's worth of extra food and water in case you break down or get stuck during or shortly after a soaking rain.

Anglers sometimes have to leave their campers and boats, and return days later to retrieve them. Even for rigs not towing anything, wet roads in the Fort Peck area can become impassable.

★

CAR CAMPING

Peck has a wide range of camping opportunities. The Downstream, West End, Fort Peck West, and Hell Creek campgrounds provide electrical hookups, showers, flush toilets, fish-cleaning stations, marina stores, and more. Rock Creek and Crooked Creek have small marina stores and potable water. The Pines has potable water and a fish-cleaning station.

The rest are primitive campgrounds equipped with vault toilets, picnic tables, and fire pits, but not much else. Bring all the drinking water, ice, firewood, and gas you'll need, along with sturdy garbage bags to pack out your trash.

If you need to vacate a campground for more than a day, never leave your camper or fifth-wheeler unattended in a campsite. Not only is that discourteous, it violates agency regulations. Instead, find an out-of-the-way place to store your camper so you don't tie up prime campsites others might want to use in your absence.

And for a bit of rare good news: With the exception of the four developed campgrounds, camping is free!

Tip: If tent camping, make sure your tent can survive gale-force winds. Make sure it is staked down securely. Don't leave anything in camp that can blow away at night or while you're out fishing on the reservoir.

BOAT CAMPING

You can boat camp anywhere on the reservoir, choosing from hundreds of prime and rarely, if ever, used campsites. There are no facilities, of course, so bring everything you need and leave no sign that you camped there.

Tip: Watch the forecast. Don't boat camp in wet weather unless you want a thick layer of gumbo covering everything you own.

WEATHER

Like in most of Montana, the weather at Peck is unpredictable. One thing you should count

on is the reservoir being so windy one or two days of your trip that you can't fish it, requiring you to spend the time hunkered down in camp. Also, in late spring and throughout summer, expect a major thunderstorm or two. While fishing, stay alert for incoming storms and try not to get caught out on the reservoir. If you get nailed by a big storm, seek shelter in a protected bay and wait out the bad weather rather than try to cross the rough, lightning-exposed water to make it back to camp.

Tip: Prepare for the worst thunderstorm of your life and bring the best rain gear you can afford, something suited for working on a crab boat in Alaska. Also, start fishing early; morning storms are rare.

BOATS

You can fish from any type of boat, including fishing kayaks, but most anglers use V-hulled craft suitable for long runs, 16-foot or longer with at least a 60-horsepower motor. If you have a small boat, don't venture too far from camp. Fortunately, the fishing is often just as good close to boat ramps as it is miles away.

Avoid beaching your boat overnight unless you're sure of the weather forecast. A nighttime thunderstorm could blow in, and you might be shopping for a new boat. Experienced Fort Peck anglers bring their boat ashore every evening and launch again in the morning.

You can buy boat gas only at Fort Peck West, Rock Creek, Hell Creek, and Crooked Creek. For all other access sites, bring enough gas for the entire trip.

Other equipment to bring: small generator to charge trolling batteries, battery charger, compressor, jump starter, jumper cables, two spare tires for the truck and boat, self-sealing liquid for tires, extra batteries in all the sizes you might need, fuses, extra bolts and screws that may shake loose, and tools to fit every bolt and screw in your boat, trailer, and camper.

Tips: Make sure you have good boat trailer tires, which take a beating on the rough access roads. Put a kicker motor on your boat even if you don't use it for trolling. If your big motor fails, it will get you safely back to camp.

COMMUNICATIONS

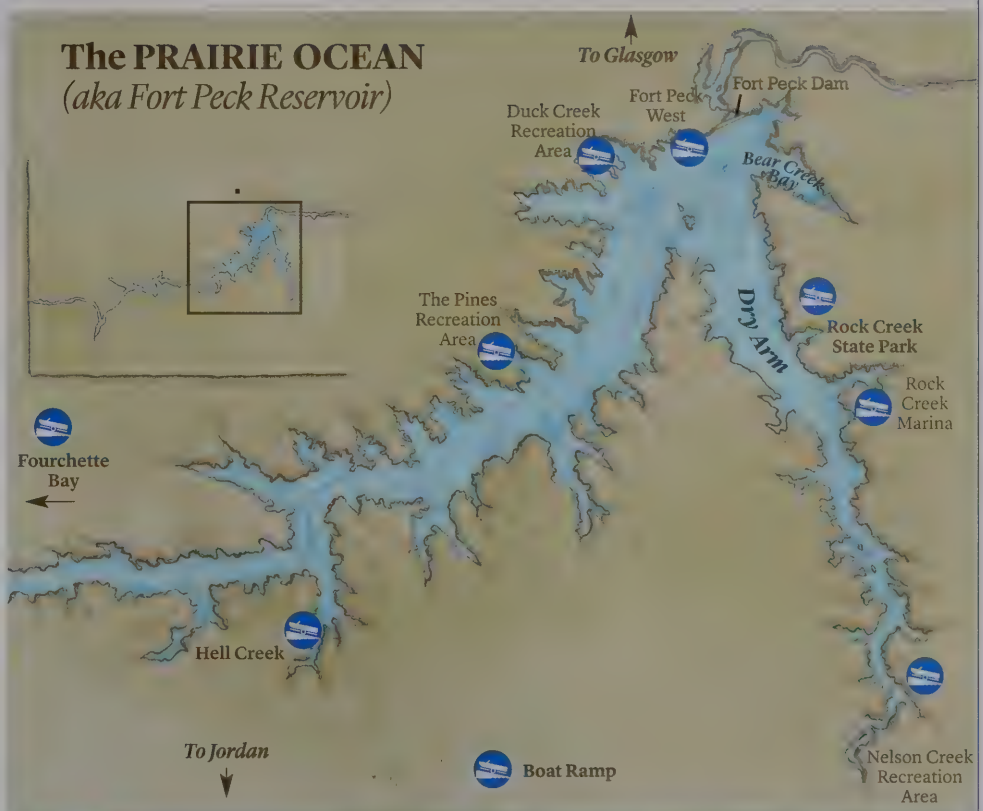
When phone companies say they have service "almost everywhere," that "almost" includes Fort Peck. Verizon has some service, but AT&T has no service near the reservoir.

Marine radios work well on the eastern portions of the reservoir around the dam, Dry Arm, and Hell Creek, but get increasingly unreliable as you go farther west.

Tip: For the extra cautious, bring a satellite phone or other emergency communication device like a SPOT or InReach satellite transmitter.

FISH CLEANING

Fort Peck West, Hell Creek, the Pines, and Rock Creek FASes have fish-cleaning stations. Otherwise, you have two options: gut your fish out on the lake in your boat or on



NOTE: Some boat ramps may be unusable due to low water levels on the reservoir. ***Always check the FWP, U.S. Army Corps of Engineers, BLM, and other websites for reservoir levels and current boat ramp conditions before heading to Fort Peck.***

shore and dispose of the entrails in deep water (which is legal, by the way), or clean the fish in camp and take the entrails out to deep water first thing the next morning. But remember: While on the water, you have to keep the head, skin, fins, and tail attached to all harvested fish so a game warden can identify and count the species. Also, never leave entrails in or around camp or on the shoreline near camp.

Bring a cooler full of block ice to keep fish cold. Pack in self-sealing bags and use a Sharpie to mark them with number of fish, species, and date. See page 80 of the 2022 FWP Fishing Regulations for fish and fillet transport regulations.

Tip: Water near shore is often muddy. Bring a pail in the boat. At the end of the fishing day, fill it with clean lake water to use back at camp for washing fillets. Bring a second bucket for entrails that you can dump in deep water after launching the next morning.

BUGS

Thankfully, mosquitoes are rarely a problem on or around Fort Peck. But in warm weather, annoying, nonbiting flies and gnats buzz around. The worst insect pests are those nasty little flies that attack your ankles on hot days out on the water.

Tip: If wearing sandals, wear socks or bring a pair in the boat in case the ankle-biters are out.

★

Prepare for the worst thunderstorm of your life and bring the best rain gear you can afford, something suited for working on a crab boat in Alaska.

★

FISHING PROTOCOL

A few of my pet peeves:

- Never go between a boat that's fishing on a point and the point itself, even if it looks like there is enough room. That is their water. Go around them on the lake side.
- Never share a point with another boat unless invited. Fort Peck is a massive reservoir with many other points to fish.
- Leave good fishing points near camp for anglers with small boats who can't do long runs.

MAPS AND MORE

Be sure to contact the U.S. Army Corps of Engineers for its "Fort Peck Lake and Dam" brochure. Contact the U.S. Fish & Wildlife Service for its free map of the Charles M. Russell Wildlife Refuge.

Due to persistant extreme drought throughout the upper Missouri River watershed, water levels at Fort Peck Reservoir were at record lows when this issue went to press in early February 2022. Crooked Creek access, especially, will likely be closed for a second year in 2022. However, conditions could change depending on late winter and early spring precipitation. Before heading to Peck, visit the FWP, U.S. Army Corps of Engineers, BLM, and other websites for reservoir levels and boat ramp conditions.

HOW TO WIN THE BIG GAME LOTTERY

By Joe Nickell

Making sense of Montana's complex limited-license drawing system

WARNING:

This article is intended mainly for big game hunters who have tried but never drawn an FWP limited permit or license. Reader discretion advised.

The Sun River Wildlife Management Area elk permit. The East Fork Bitterroot mule deer buck permit. Every bighorn ram, mountain goat, or moose permit. Often referred to as "lifetime tags," these extremely limited, highly coveted licenses and permits are the toughest draws in Montana hunting. The odds of being drawn for many of the lotteries held each spring by Montana Fish, Wildlife & Parks are greater than 100 to 1, or less than a 1 percent chance. In a few hunting districts, more than 1,000 hunters may put in for a single permit—odds that make a Las Vegas roulette table look like a sure thing.

A hunter's chances are slightly better to draw the West Garnet moose permit, though still only about 2 percent. Back in 2000, after only a few years of trying, Carl Williams of Missoula drew that tag, which covers a sizable section of mountainous country bounded by Missoula, Ovando, Helmville, and Drummond. His good fortune didn't end there. "On opening day my son and I were driving down a forest road and we saw a large bull about 50 yards in the forest," says Williams. "We stopped, I got out and snuck closer, and made the shot. We were able to load him into the back of my brother's pickup truck—whole."

The moose gods continued to smile down. In 2007, after the seven-year wait to reapply, required by FWP for anyone who draws a moose permit, Williams again put in for the West Garnet tag. Beating astronomical odds, he again was drawn in the random computerized lottery. "I'm not much of a believer in luck," Williams says, "but it was

quite the shock to see that permit show up in the mail again."

If you hunt in Montana long enough, you'll eventually hear about someone like Williams who drew two (or more) of the state's most coveted permits. Some hunters have been selected from the various lotteries for a bighorn ram permit (technically an "either-sex" permit) one year, then a prized Elkhorn either-sex elk permit (hunting district 380, south of Helena) the next. Others have won mountain goat, moose, and trophy mule deer tags all in the same year.

What's going on here? Are some people just lucky, or is there something broken about the FWP permit and license lottery system? As a big game hunter who has been trying to draw a moose tag for the past 20 years with no success, I set out to learn just how this puzzling process works.

HEADS 15 TIMES IN A ROW

I started by gaining a better understanding of probability, which concerns the likelihood of getting drawn for a permit. "Most people have a really hard time getting their heads around the different ways probability works," says Paul Lukacs, associate dean of graduate research at the University of Montana College of Forestry and cofounder of Speedgoat Wildlife Solutions, a consulting and software company. Lukacs has spent his career studying and teaching the application of statistics in wildlife management.

He points to the most basic probability example: a coin flip. For each flip, there's a 50 percent chance (1 in 2) of a coin landing heads up. Same for tails. "But if you flip the coin a bunch of times in a row, you're going to eventually get pockets of seemingly unlikely results," Lukacs says.

For instance, in a series of 1,000 coin flips, heads could come up 10 or even 15 times in a row. If you watched only those particular flips, you'd likely suspect something weird was going on—like the head side was weighted more than the tails side—"but in fact that's just part of normal probability," says Lukacs. "The thing is, you wouldn't recognize that unless you watched all 1,000 flips."

Similarly, hunters can't see the big picture of hunting permit drawings and instead focus only on the oddities—the drawing equivalent of 15 heads in a row—such as when one hunter scores multiple hard-to-win permits while others go decades without ever getting a coveted tag in the mailbox.

FACTORS INFLUENCING YOUR ODDS

To understand what's really going on, hunters need to consider a number of factors that influence the likelihood of drawing a desired tag. FWP publishes the drawing statistics from each previous year in the annual hunting regulations booklets. But those odds tell only a small part of the story.

For instance, the changing number of hunters applying for a particular license or permit from year to year can shift the odds significantly. Take the North Clark Fork bighorn sheep permit, for example. In 2020, 1,234 people applied for that tag. In 2021, the number dropped to 463 applicants for the same number of permits. That meant the odds of getting drawn nearly tripled in one year.

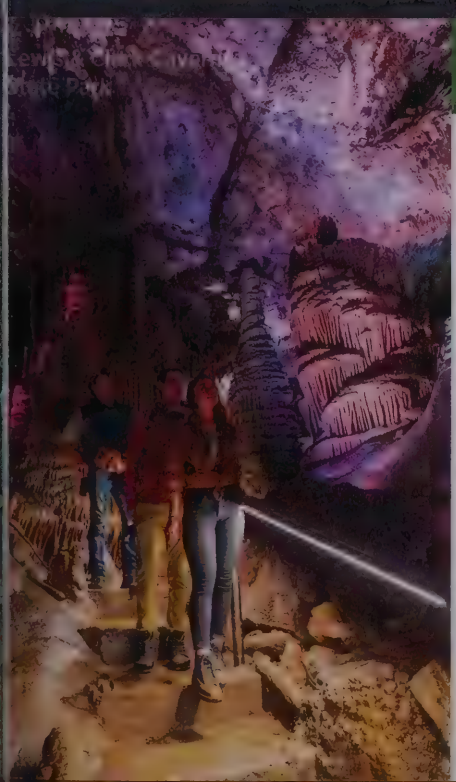
Changes in harvest quotas also can dramatically alter a hunter's chances from year to year. A harvest quota is the maximum number of sheep, mountain goats, moose, or other big game animals that FWP determines can be harvested each year by hunters in a given hunting district. When quotas are already small—for example, in most moose, bighorn sheep, and mountain goat hunting districts they can be less than five animals—a decrease or increase of a single animal from the quota can lower or raise your odds of drawing that permit by as much as 50 percent.

Then there's the influence of bonus points, which FWP began offering in 2001 as a one-point-per-year add-on purchase for moose, sheep, and goat drawings, and in 2003 for elk and deer permits and B (antlerless) licenses. When consistently purchased and used correctly, bonus points are the most powerful tool hunters have under their control. But they're often misunderstood.

The biggest misconception is that bonus points move you up the preference ladder. But there is no preference ladder.

The biggest misconception is that bonus points move you up the preference ladder. But there is no preference ladder. What bonus points actually do is give hunters additional entries in their chosen drawing, like having more tickets in a cash lottery. Those additional entries rapidly increase as a hunter

Joe Nickell is a writer and hunter in Missoula.



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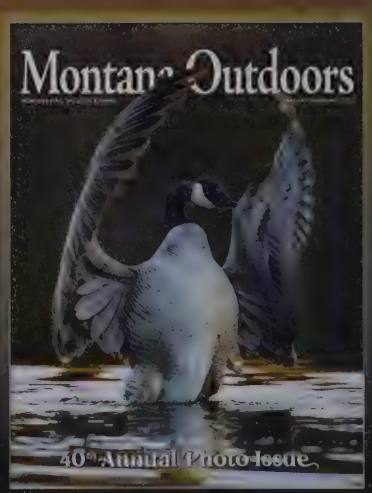

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accumulates points year after year. That's because each point provides an additional number of entries equal to your number of bonus points times your number of bonus points (in other words, your number of bonus points squared). Thus, a hunter who has purchased five bonus points will receive 26 entries in a single drawing: (5 x 5) + 1. A hunter with the maximum of 21 moose, sheep, or goat bonus points allowed in 2022 will get 442 entries.

"The Bonus Point System was put in place to help reward people who continue to apply year after year, rather than leaving everything up to chance for every hunter," explains Neal Whitney, who recently retired from his job in the FWP License Bureau of managing the department's limited-tag drawings. "It doesn't make everyone happy, but if you look at the statistics each season like I have, the Bonus Point System does what it was intended to do by spreading those limited draw tags out to more people over time."

Whitney notes that in drawings where the success rate published in the regulations is already relatively high—for example, most pronghorn (antelope) either-sex license drawings and many elk B (antlerless) license drawings, where the overall success rate tends to be in the double digits—even just a few bonus points applied to the drawing can eventually guarantee success.

"For instance, if you're looking at a place with a 20 percent drawing success rate, usually everyone putting in will be drawn after putting in for four or five years—at least those who are buying and using bonus points," Whitney says.

Bonus points can also increase your chances in low-odds drawings—but with some important caveats. First, keep in mind that when chances of drawing a particular tag are less than 1 percent, even tripling your odds with bonus points will only result in a small overall chance of success.

Moreover, in the most coveted drawings there's a good chance that you'll be competing with hunters who have more bonus points than you. Known colloquially as "point creep," this phenomenon generally means there will never be a number of bonus points a hunter can earn that guarantees success in those drawings.

For example, in 2021, 80 resident hunters who each had 18 bonus points—the maximum number of deer bonus points that a hunter can own—put in for the East Fork Bitterroot mule deer buck permit. Four drew permits, meaning one out of every 20 of those hunters got to hunt Montana's most coveted deer unit. That still might sound like long odds until you consider that 1,334 residents with no bonus points put in for that same tag in 2021. Only one drew it.

> **"The Bonus Point System does what it was intended to do by spreading those limited draw tags out to more people over time."**

One in 1,334 versus one in 20. It's pretty clear which is preferable. Even so, 76 of the hunters with 18 bonus points didn't get drawn last year. They likely wonder what's up with that. "I often hear people say these points aren't increasing their odds," Whitney says. "Well, statistically we can show that they are increasing the odds significantly—but for the most desired tags,

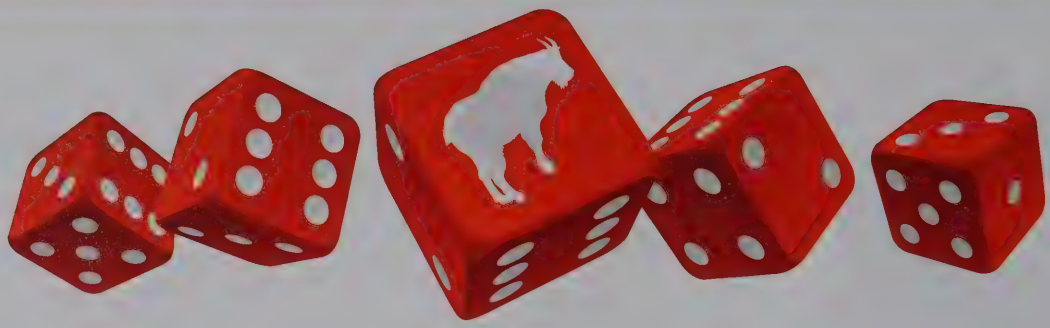
Tips for improving your odds

▶ Always buy bonus points (even in years when you know you won't hunt). "That's the simplest advice for anyone who wants to draw a limited tag," says Dave Barnett of the goHunt online hunting publication."It's really the only thing you can control when it comes to the odds if you're after a specific tag." Hunters who did not apply for a license or permit in the current year can still buy a bonus point for that license or permit July 1 to September 30.

▶ Consider applying for special tags that are in relatively lower demand, such as cow elk or cow moose permits. That's how FWP's Neal Whitney has managed to spend two seasons chasing moose: He applies for an antlerless permit with the highest average odds in Montana.

▶ Don't just look at last year's statistics. According to Whitney, "the number of applications for a particular permit tends to swing back and forth dramatically from year to year because people say, 'Oh, too many people are applying in that district, so I'll avoid it,' and then everybody moves to a different district and the same thing happens again." Hunters can get a better sense of these shifts by comparing prior-year application data at myfwp.mt.gov/fwpPub/drawingStatistics.

▶ Be patient and enjoy the opportunities along the way. "I think nonresidents in particular fail to realize the sheer amount of great hunting that's available on the general tags in Montana," says Barnett. "You've got about 80 percent of the state open to general-tag hunting over a long hunting season. So a special permit is a great bonus if you get it, but even if you don't, you can still have some great hunting across the whole state."



the result is still very low odds. So that's the kicker with the difficult licenses."

It's also worth noting that these are random-selection lotteries, which means that occasionally a first-timer will get drawn while hunters who have put in for years and earned dozens of bonus points won't.

It's like when someone buys 500,000 Mega Millions lottery tickets. That person's odds of winning are much greater than those of people who buy far fewer tickets. But that still doesn't guarantee a winning number, and occasionally some lucky soul with just one ticket scores big.

NO GUARANTEE

Nonresident hunters have additional factors to consider. Most important is the state law granting only 10 percent of limited-availability tags to nonresidents. In districts with harvest quotas of nine or fewer bighorns or other species, that usually (but not always) means zero tags go to out-of-staters.

Also, in order to even qualify for a deer or elk limited-permit drawing, nonresidents must first possess a lottery-awarded Nonresident General Combination License. Since 2011, those have been sold through a preference point system that works differently from bonus points: Nonresident hunters with the highest number of accumulated preference points—which they can buy each summer (one per year, or two if hunting with an outfitter) for $100 each—automatically receive the Combination License, with the remainder distributed (via a random drawing when necessary) to applicants with the next-most preference points.

Though nonresident hunters can generally count on receiving a General Combination License every one to two years, it's not guaranteed for applicants with no preference points. And, of course, getting a combo license is no guarantee of then drawing a limited-availability permit.

ODDS GETTING TOUGHER EACH YEAR

Hunting is a pursuit of unlikely results. Those results become the stories we keep and share—whether about the person who drew multiple lifetime tags, or about the giant bull elk that stepped out of dark timber and into our crosshairs on the last day of the season.

For those who hope to draw a lifetime tag, it's probably a good idea to settle in for a wait. Because the reality is, those tags are only getting harder to obtain—for everyone.

"Over the last two years especially, every western state has seen an insane influx of applications," says Dave Barnett, research manager for goHunt Insider, an online hunting publication and community. Each year, Barnett reviews regulations and analyzes data on every single big game permit drawing in 13 western states. By running a million simulated drawings in each state based on updated permit allocations, past numbers of applicants, and bonus and preference points, he's able to publish tables of probabilities aimed at helping subscribers understand drawing odds and strategize where and what to apply for, based on how many preference points, bonus points, or both they have accumulated.

> ★
> **"A lot of us at FWP definitely know what it's like not to get drawn for a limited permit."**
> ★

"Whether it's because of COVID or whatever, you're seeing more hunting pressure and more applicants for limited-entry permits," Barnett says.

FWP drawing statistics bear that out. "With the growing number of applications we see each year, it is getting harder to get special tags—even for people with the maximum number of bonus points," Whitney says.

He should know. The license lottery guru has put in for mountain goat and bighorn ram permits for more than 20 years with no success. "A lot of us at FWP definitely know what it's like not to get drawn," he says.

Whitney and others familiar with the department's drawing lotteries also know that, for many of the most coveted tags, most hunters who apply will never get drawn—even if they apply their entire life. "In HD447 (Highwood Mountains) for instance, we had 1,348 hunters apply for a single mountain goat license in 2020. We had 7,089 hunters put in for just 25 sheep tags in HD680 (Missouri River Breaks)," says Whitney. "Those are long odds no matter how many years you put in."

HIGHER THAN ZERO

Another factor is that Montana doesn't have enough of the most coveted big game animals to go around. To protect populations, each year FWP biologists recommend harvest quotas that total only about 300 moose, 250 bighorn sheep, and 200 mountain goats. Compare that to the 25,000 elk and 100,000 deer harvested in Montana each year. "The demand to hunt moose, sheep, and mountain goats far exceeds the supply," Whitney says.

As for Carl Williams, the charmed hunter who drew those two moose tags, his second hunt didn't have a fairytale ending. During the 2007 season, Williams hunted hard, yet he says he never even saw a moose.

After another seven-year waiting period, the Missoula hunter resumed applying for a moose tag. He hasn't drawn one since. Certainly the odds of pulling a third tag are extremely low—but hey, they're higher than zero.

And as every hunter knows, success only comes to those willing to get out there and give it a shot.

Common misconceptions...

...about Montana's permit and license lottery system

"Each bonus point only gives me one additional entry in a drawing."

Your total number of bonus points is squared to determine additional entries. Granted, this misconception is true when you have just one bonus point, because 1 x 1 = 1. But two bonus points increase your number of entries by four; three bonus points by nine, and so on.

"If I stop buying bonus points or applying for permits, the points I've already bought will expire."

Until 2017 this was true. But now, bonus points never expire. *Nonresidents* should be aware, however, that *preference* points for combination licenses are lost after one year of not applying for a license. But don't worry—even if this happens, you still keep your accumulated *bonus* points.

"'Point creep' means that I will never have a chance to draw a lifetime tag."

In some other western states that give first dibs to those with the most bonus points, it's true that most hunters will never accumulate enough points to even be entered into drawings for certain tags. But in Montana, applicants with zero or few bonus points still get at least one entry in every drawing they enter. And each year, some of those people find unexpected success. For example, in 2021, a hunter with one bonus point pulled one of the Hi-Line district moose permits, beating out 1,260 unsuccessful applicants—including all nine of the people who entered the drawing with 20 bonus points. Things like that don't happen often, but they do happen.

"Applying as a party increases the odds of a successful draw."

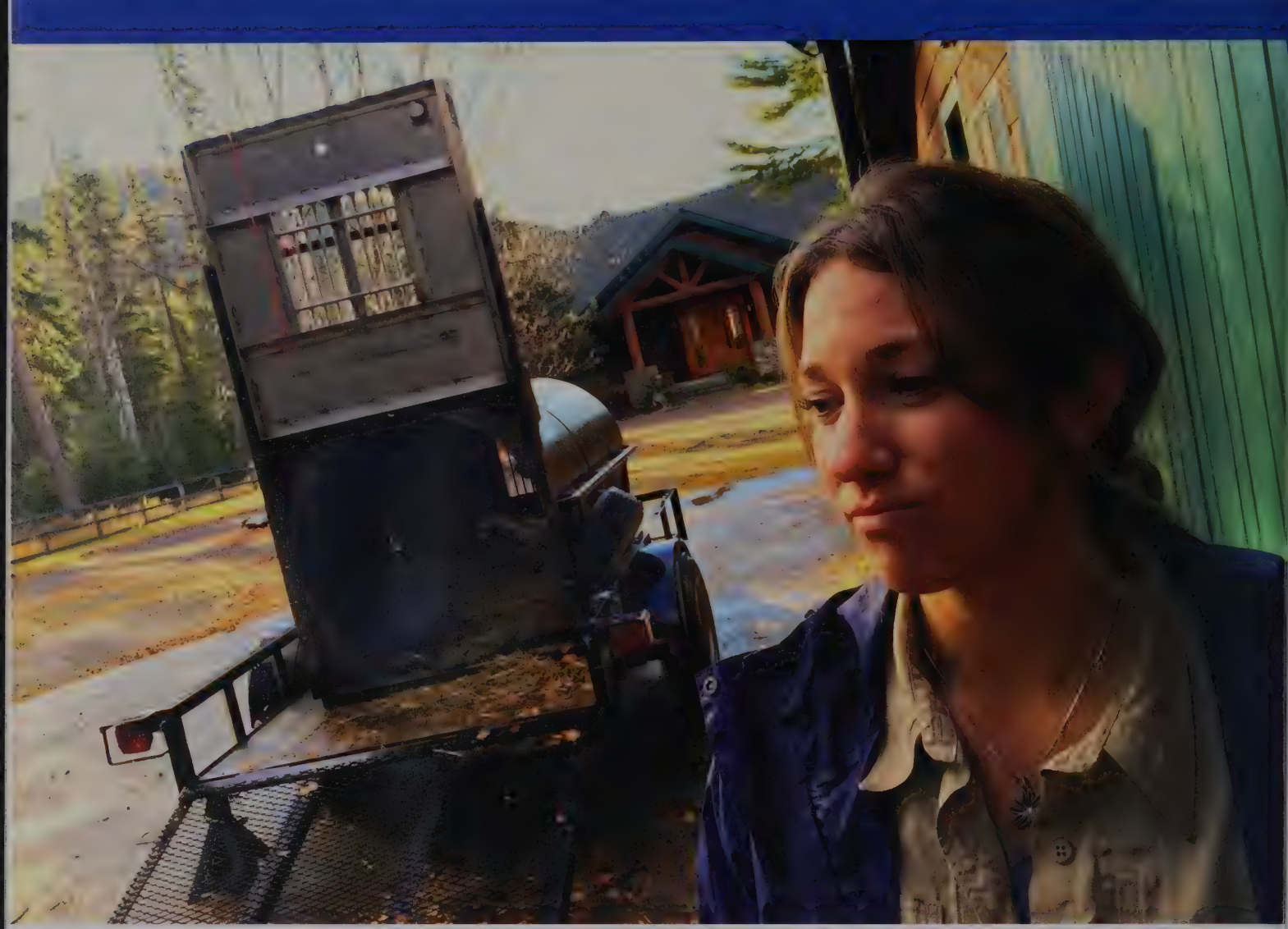
That's true if you're the person in your party with the lowest number of bonus points. The reason is because the total number of bonus points among all party members is averaged, and that average—not the total—is squared to determine the number of entries your party will earn in a drawing. But it also means that the person with the most bonus points in your party will likely see decreased odds in the draw. There's an additional handicap that parties face: If your party of five is drawn 26th in a district with a quota of 30 animals, there won't be enough permits left to satisfy your whole party—in which case, none of you will get the permit.

In 2021, a hunter with one bonus point pulled one of the Hi-Line district moose permits, beating out 1,260 unsuccessful applicants.

"The fact that somebody can get two 'lifetime' permits proves that someone is picking favorites."

The design of the drawing system would take too much ink to explain in detail, but suffice to say that no person's individual information—not their name, ALS number, address, or anything else—is used or even accessible as part of the actual drawing process. Instead, each applicant is assigned random numbers for each of their entries (including one for every bonus point entry) and the drawing system uses those numbers. Additional checks ensure fairness and lack of bias, including periodic audits by the state's Legislative Audit Service. The system consistently passes those tests.

That said, the drawing system actually isn't entirely random, by design: As noted above, it's weighted to favor people with the most bonus points. Bonus points actually help reduce the likelihood of the same person getting a super-rare permit more than once—because that person has to start over with zero bonus points after a successful draw and will then be competing with applicants with many more entries in the drawing. But even in such a system, when you have more than 323,000 special license applications across 10 different tag types, as was the case in 2021, there are bound to be a few people who luck out and beat even astronomical odds. ■



FILLING THE GAPS

Montana's Outdoor Legacy Foundation allows people to help fund FWP's grizzly, raptor, access, and nongame wildlife programs.

BY TOM DICKSON

As we drive to a lake home about 20 miles west of Kalispell, Justine Vallieres tells me she's not looking forward to whatever we find. Two days earlier, the Montana Fish, Wildlife & Parks bear management technician had set up a culvert trap baited with deer meat to live-capture a grizzly that had repeatedly broken into a barn next to the house.

Following a two-track lane through the Flathead National Forest, Vallieres explains the dilemma: "If the bear's not in the trap, that means it could still be out there breaking into cabins. But if it is trapped, and DNA tests show it's the one that's breaking in, we'll have to euthanize it.

"Killing grizzlies," she adds, "that's the worst part of this job."

Vallieres figures that over the past four years she has had to kill 17 grizzlies and assist her boss, now-retired FWP bear management specialist Tim Manley, with another eight. "It's really hard to put down a grizzly after people lured it into a residential area with their food and garbage, because it's just being a bear," she says. "At the same time, we can't allow them to break into cabins and put people's lives at risk."

The solution, for Vallieres and the eight other technicians who help FWP bear management specialists, is to prevent grizzlies from causing problems in the first place. She installs electric fencing around composting sites and orchards, informs people in bear country to keep pet food and livestock feed indoors, and explains to hobby farmers that their chickens are grizzly magnets. The 32-year-old technician, who grew up in New Hampshire and studied at the University of British Columbia, even set up a Facebook page connecting area homeowners who can't harvest their plums and apples—irresistible bear attractants—with those who can. "It's all about finding ways for humans and grizzlies to coexist so people stay safe and bears stay alive," she says.

KEEPING PEOPLE AND BEARS SAFE Using donations, Montana's Outdoor Legacy Foundation supports a wide range of FWP projects. Among the highest priorities has been to fund bear management technicians like Justine Vallieres (left, shown with a culvert trap at a lake home west of Kalispell), who work with ranchers to remove dead cattle (top left) far away from traditional "boneyards" near livestock and human dwellings. They also help communities and homeowners install bear-resistant garbage bins (top right) so that grizzlies don't become addicted to human foods.

As we emerge from the forest and enter a clearing, we see in the distance the house, the barn, and the bear trap.

THE GREAT BEAR

For years, Montana's Outdoor Legacy Foundation funded Vallieres's and the other technicians' work to protect human life, property, and bears. The foundation was formed in 1999 to help FWP fill vital funding gaps in essential programs. "It's the ideal mechanism for people to donate private funding so the department can do a better job of managing bears, acquiring access, rehabbing raptors, and all that other work that people really want to help support," says Jim Williams, FWP regional supervisor in Kalispell.

Mitch King, the foundation's director and previously a program manager with the U.S. Fish & Wildlife Service, says the foundation works closely with FWP to make sure projects are scientifically sound and represent the agency's highest conservation priorities. "These are the cream of the crop, the activities that matter most to FWP," he says.

An eight-member board of directors meets quarterly to discuss fundraising strategies that support FWP priority projects. The foundation raises money through donations from individuals, corporate partnerships, grants from other organizations and foundations, and funding from the Montana Fish and Wildlife Conservation Trust (a federal trust fund that the foundation manages. See sidebar on page 43).

Tom Dickson is the Montana Outdoors *editor.*

Keeping grizzlies out of trouble is a major focus. "FWP took over funding the bear technicians in 2021, but the foundation was absolutely vital in getting that essential program off the ground and established," says Neil Anderson, FWP regional wildlife manager in Kalispell. Anderson adds that the foundation still pays for GPS tracking collars, electric fencing, and other technology essential for the techs to help reduce conflicts between bears and people.

> It's all about finding ways for humans and grizzlies to coexist....

Bear-aware education is another priority. The foundation has funded videos and education programs on: camping, fishing, hiking, hunting, and mountain biking in bear country (now considered all of Montana's western one-third); how farmers and ranchers can protect their families and property; living in bear country; and what to do if you encounter a grizzly or black bear. "Reducing conflicts between people and bears is probably the single most important work the foundation has funded over the years," says Jeff Hagener, foundation board chair and former FWP director.

Hagener says the foundation has purchased bear education trailers for county fairs, sponsored bear spray demonstrations, and helped pay for a simulated charging bear that rushes a participant to show how fast the large carnivores move. It also funds homeowner education and bear-resistant garbage containers for neighborhoods and hydraulic-lid dumpsters at county landfills, as well as education programs for hunters in fall, when bears are prepping for hibernation, and hikers in spring, when bears emerge from their dens.

Most recently, the foundation purchased a $7,000 trailer to help ranchers transport livestock carcasses away from the traditional "boneyards" that are not far enough from corrals and human living quarters.

"All this is a critical component of grizzly bear species recovery," Hagener says. "If grizzlies are ever to be delisted, Montana can't be killing dozens of bears every year because they are getting into trouble."

MORE AND MORE ACCESS

Another FWP priority the foundation supports is increasing public access by helping the department and groups purchase prime fish and wildlife property from willing landowners. Through the Montana Fish and Wildlife Conservation Trust, the foundation recently helped the Flathead Land Trust and FWP buy the Bad Rock Canyon Wildlife Management Area, 772 acres of prime fish and wildlife habitat on the Flathead River. The scenic property adds to a 12,000-acre network of conserved land along 43 miles of

ACCESS FOR ALL A top priority for Montana's Outdoor Legacy Foundation funding is FWP projects that secure land for public access and fish and wildlife habitat. Left: The Montebello access site sits on the southwest shore of Flathead Lake and will provide paddling access to Cromwell Island and Wild Horse Island State Park. Below: The Bad Rock Canyon Wildlife Management Area along the Flathead River near Columbia Falls.

the Flathead between Columbia Falls and Flathead Lake.

For another recent acquisition, the foundation used a new Montana Fish and Wildlife Conservation Trust funding program called "Assets for Conservation." This purchase secured 1,400 acres of prime habitat for elk, mule deer, black bears, moose, mountain lions, ferruginous hawks, and grassland birds in the south Elkhorn Mountains between Butte and Helena. The property, which had been targeted by housing developers, was then sold to the U.S. Forest Service for safekeeping.

Hagener and King are especially excited about a new 15-acre property on Flathead Lake that the foundation purchased then sold to FWP. "Government agencies can take a long time to buy land. But the foundation can step in and do things like pay for appraisals or even buy the whole thing before developers can get their hands on it," Hagener says. The lakeside tract, known as the Montebello property, will be made into a water recreation access area that looks out at nearby Cromwell Island and gives paddlers easier access to Wild Horse Island State Park.

"Montebello is an example of how people can help FWP and contribute to what we do," Williams says. "People love knowing that this agency is increasing public access, securing critical habitat, and managing fish and wildlife populations. They want to help, and that's where the foundation comes in. Because without it, there's really no way for people to directly donate to all these incredible projects."

RAPTORS AND OTHER NONGAME

Another FWP and foundation priority is nongame wildlife conservation. The foundation raises money to fund research projects on wolverines, bats, harlequin ducks, and high-elevation species such as white-tailed ptarmigan and American pikas.

> Montebello is an example of how people can help FWP and contribute to what we do.

Then there's outdoor education. Laurie Wolf, chief of the FWP Education Bureau, says the foundation raised $180,000 to buy a van, known as Traveling WILD, and hire summer staff to deliver educational programs about fish and wildlife across Montana. "That never would have happened without them," she says.

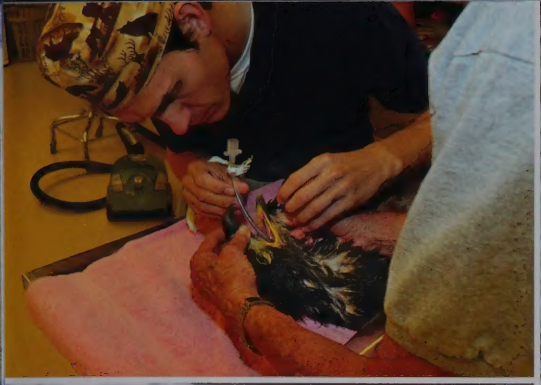
Wolf says the foundation was also the driver behind a "distance learning" program, paying for equipment and coordination so that 200-plus students in 25 schools across Montana could learn about sage-grouse. The foundation also paid for a new sound and video studio in Helena, where FWP education specialists provide additional distance learning programs and produce videos viewed by students and adults on YouTube and other platforms (watch an example at https://youtu.be/hvGTgx9ZCsw).

Montana's Outdoor Legacy Foundation also focuses on projects that rehabilitate wounded raptors for release back to the wild. Its most ambitious effort is a capital campaign to raise money for a new raptor facility at Montana WILD's Wildlife Center, next to its Education Center on Helena's west side. The Wildlife Center cares for and rehabilitates injured animals, mainly birds of prey, and is chronically short on space.

"We're super excited about the potential for this," says Wolf, explaining that the envisioned 4,500-square-foot building would be able to house and rehabilitate far more injured raptors than the current facility allows, plus dozens of "education" raptors too disabled to live in the wild that are used to teach visitors about the winged predators.

"The facility will include enclosures for our 18 different education species, and the other half will house raptors for rehabilitation," Wolf says. The new facility will also provide viewing areas where bird watchers and others visiting nearby Spring Meadow State Park can see raptors up close. "There will be no other place in Montana where someone could get so close to a golden eagle, a saw-whet owl, and a prairie falcon all in one day," Wolf says.

So far, the campaign has raised about $400,000 of its $800,000 goal, most of it from the Helena-based Foundation for



BIRDS AND OUTDOOR ED The foundation also has (clockwise from top left) funded raptor rehabilitation at the FWP Wildlife Center in Helena (a facility it is raising funds to enlarge); research on harlequin ducks and other little-known wildlife species; and FWP's Traveling Wild van, which delivers outdoor education programs to students and communities across Montana.

Animals. "All of us are hoping others who care about raptors will help out, too," Wolf says.

WILDNESS

If there's one word to describe all the FWP programs funded by Montana's Outdoor Legacy Foundation, it's *wildness*. The new, expanded raptor center would rehabilitate more injured eagles, hawks, and owls for recovery back in the wild. The foundation's work overseeing the Fish and Wildlife Conservation Trust helps Montanans and visitors experience wildness throughout the state's mountains, waters, and prairies. Through education programs, kids and adults learn how to help wildlife stay wild so the animals aren't lured dangerously close to where people live.

The importance of educating Montanans is on Vallieres's mind back at the Kalispell-area lake home as we park and walk toward the culvert trap. Except for an old deer leg still hanging in the opening, it's empty. "You hope the bear just goes back into the mountains," she says. "But that's not usually what happens. Once they find food down here, they almost always come back for more."

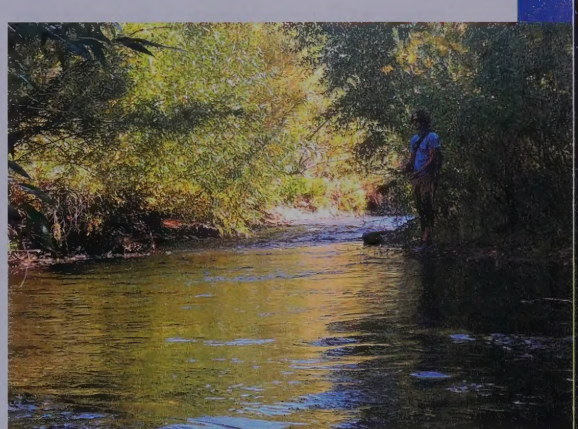
To learn more about Montana's Outdoor Legacy Foundation, visit mtoutdoorlegacy.org/.

The Montana Fish and Wildlife Conservation Trust

In addition to helping FWP fill funding gaps for critical projects, Montana's Outdoor Legacy Foundation is the fiduciary manager of the Montana Fish and Wildlife Conservation Trust and manages the trust's habitat, access, and recreation grants.

The trust was created in 1998 from the sale of recreation lots on Canyon Ferry Reservoir, which are owned by the Bureau of Reclamation, to cabin owners who had been leasing the properties. Ninety percent of the proceeds were deposited into the trust, and federal law mandates that earnings fund, through grants, land acquisitions that restore and conserve fish and wildlife habitat, enhance hunting and fishing and other outdoor recreation, and improve public access to public lands.

Under the foundation's oversight, the trust has more than doubled from an original value of $15 million to $33.5 million today. The foundation disburses funds under the direction of two independent oversight entities. An agency board (representing the five land management agencies in Montana) and a citizen advisory board are responsible for identifying projects that ensure the trust's goals are met. Over the past two decades, the trust has awarded nearly $14 million in land acquisition grants, $7 million of which are in the Missouri River watershed and the rest elsewhere across the state.



An angler fishes for trout at Prickly Pear Creek Fishing Access Site in the Helena Valley.

Examples include $190,000 to help purchase a fishing access site on upper Prickly Pear Creek in the Helena Valley, $50,000 to supplement acquisition of 22 acres of parkland along the Bitterroot River in Hamilton, and $60,000 to help Walleyes Unlimited buy the 71-acre Black Bridge Recreation Area near Glendive.

To learn more about these and other projects or find out how your agency or organization can apply for Montana Fish and Wildlife Conservation Trust grants, visit mtconservationtrust.org or mtoutdoorlegacy.org/. ■

CLOCKWISE FROM TOP LEFT: JESSE LEE VARNADO; DICK WALKER; LUKE DURAN; LUKE DURAN

On the Cutting Edge

By Tom Dickson

Those who say a dull knife is more dangerous than a sharp one have never looked inside my medicine cabinet.

The adage derives from thinking that, because a worn blade requires more pressure to do the job, it's more likely to slip off the potato or whatever you're cutting and end up slicing your finger or hand.

Maybe that's true for some people. But I've found that a dull knife doesn't do much harm, because, well, it's dull. But a sharp one! That's where my medicine cabinet comes in. It contains every type of adhesive finger bandage you can imagine: sheer, flexible, waterproof, hydrocolloid gel, knuckle, butterfly, all in assorted sizes and shapes, along with bottles of iodine, hydrogen peroxide, Betadine, and other disinfectants.

I regularly slice or impale myself opening birthday presents, breaking down Amazon boxes, prying apart frozen bagels, or trying to carve into the clear plastic packaging that encases so many products these days. I also cook a lot, and too often end up cutting myself while peeling apples, dicing onions, mincing garlic, chopping cabbage, and almost every time I tackle a winter squash.

Attempts to clean slime-covered fish have more than once sent me to urgent care for stitches.

These self-lacerations don't happen every day. But a few times each year, my wife comes home from walking the dog and follows drops of blood from the kitchen counter to the bathroom, where she finds me trying to open a bandage with my teeth while holding a dish towel tight around my left hand.

Perhaps tiring of the constant gore, last year she offered to buy me a metal-mesh knife-resistant glove.

What an insult. I already come up short in so many manly virtues as it is (though knife skills are obviously not just a guy thing. Both Rachel Ray and Nigella Lawson insist on proper knives and knife handling on their TV shows). I can't ride a horse, don't own a pickup, can't row a drift boat, and couldn't change a sparkplug to save my life. But a man, a Western man especially, should at least be able to handle a knife. I told her no thank you.

Oddly enough, I do know what I'm doing. In my 20s, I learned from a chef how to safely chop an onion or carrot by holding it with curled fingers, the flat of the blade resting against the top knuckles. I've filleted no small number of panfish, and I butcher deer, ducks, and pheasants each fall.

I know my way around knives. But apparently I don't pay close enough attention to what I'm doing. And too often I'm in a hurry. I've learned the hard way that knives don't like to be rushed.

Despite their hazards, I'm always on the lookout for more blades. When I enter a sporting goods store, I don't give the gun counter or optics case a second glance, content with my modest few rifles, shotguns, and binoculars. But I can't seem to leave without spending a few minutes gazing longingly at the knives on display. "Gosh, that Benchmade Steep Country with drop-point S30V fixed blade seems like something a fellow ought to have," I'll think, reaching for my wallet.

I'm as easily seduced in a high-end cooking store. German-made parers, boners, and chef knives seem designed to make me a better cook. And I swoon over those nakiris, santokus, gyutous, yanagis, honesukis, and other trim, elegant Japanese kitchen blades.

I want more knives and I want them all razor sharp. A TV ad for one honing device I bought a few years ago shows a fellow horizontally slicing paper-thin slices off the top of a tomato resting on a cutting board. That's what I'm after—and I don't even like tomatoes.

In pursuit of the perfect edge, I've bought nearly as many knife sharpening devices as I have knives. These include the Chef's Choice manual and electric models, the Presto Eversharp, several ceramic rod V-sharpeners, round and oval sharpening steels, various Arkansas stones and diamond stones, the Lansky controlled-angle system, and the Accusharp. Unfortunately, they all either remove too much metal from the blade, take too much time to master, or require more dexterity than I can summon.

Then a month ago, after much online research, I bought myself the Ruixin Pro RX-008 Professional counter mount sharpener "with 360-degree rotation flip design" and went to work.

My knives have never been so sharp. The perfectly honed 20-degree edges handle all the chopping, dicing, mincing, and even plastic package opening I require. The problem is, I can hardly type anymore because my left fingers are so bandaged up. Good thing it only takes one hand to key in a credit card number.

The metal-mesh protector glove is scheduled to arrive next week.

Tom Dickson is the Montana Outdoors *editor.*

Lewis's Woodpecker

Melanerpes lewis

By Sneed B. Collard III

SCIENTIFIC NAME *Melanerpes* is Greek for "black creeper," referring to the bird's dark coloration and the way it creeps around tree trunks searching for insects, while *lewis* derives from explorer Meriwether Lewis, the first westerner to describe the bird.

A couple of years ago, my son and I went hiking with University of Montana biologist Dick Hutto into the 14-year-old Black Mountain burn area south of Missoula. Our mission? To see and photograph a Williamson's sapsucker nest, and on this bright, sunny day we had no trouble finding one. With their dead trees and abundant insect life, burns are known to attract woodpecker species. As we walked, we also saw northern flickers, and hairy and downy woodpeckers. Suddenly, a bird with a dark back and pink breast flashed by us and landed on a nearby snag. We all looked at each other, astonished. It was a bird none of us had expected, but perhaps we should have. This, after all, was one of Montana's most surprising species: the Lewis's woodpecker.

APPEARANCE

Lewis's woodpeckers sport a "watermelon" color scheme unique among North American woodpeckers. A saturated pink, almost red, breast and face contrast sharply with a dark greenish back, wings, and head that can look black in shaded or overcast conditions. A stylish silver collar keeps the bird properly dressed for all occasions. At just under 11 inches long, the Lewis's fits solidly into the "medium-sized" bird category, but it is larger than most U.S. woodpeckers. Juveniles usually lack the stunning pink coloration of adults.

Sneed B. Collard III is a writer in Missoula.

BRETT SWAIN

SOUND

Lewis's woodpeckers make a variety of harsh or buzzy, often repeating, calls. These range from almost crowlike squawks to squeakier, shorter pips similar to those of hairy and downy woodpeckers. In contrast to most other woodpeckers, the Lewis's is a weak drummer, and according to some scientists it may often use vocalizations in lieu of drumming to advertise for mates.

HABITAT

University of Montana avian ecologist Megan Fylling, who has studied Lewis's woodpeckers extensively, describes their habitat as "big snags (cavities, perches) with an open canopy and a shrubby understory." This primarily includes open ponderosa pine and mature, riparian cottonwood stands with plenty of dead or partially dead trees. As my son and I discovered with Dick Hutto, however, they will move into burn areas once the dead trees have softened and a healthy shrub layer has grown up.

FEEDING

Lewis's woodpeckers glean insects from trees and the ground, eat fruit when it is available, and often cache nuts and seeds in cracks and crevices for later use. One thing that sets the Lewis's apart from other woodpeckers is its reliance on hawking, or flycatching. A Lewis's will perch on a branch and make repeated sallies to catch flying insects. "They have broad wings and are very maneuverable in the air, which allows them to catch their insect prey," Fylling explains. The bird's extra-wide "gape" (beak opening) also aids in prey capture.

BREEDING

Unlike most woodpeckers, Lewis's usually cannot drill and excavate entirely new nesting holes for themselves. They can enlarge and "clean up" a cavity but rely on natural cavities or those made by other species. Males and females both incubate eggs and contribute about equally to raising their young. They usually produce one brood of six or seven chicks per breeding season.

MIGRATION

Year-round populations of Lewis's woodpeckers inhabit forested, mountainous areas of the West Coast and most southwestern states. In Montana, the species spends only the breeding season here, arriving in May and migrating south by the end of September.

CONSERVATION

The Lewis's woodpecker has shown population declines in many areas, making it a species of concern. Its particular need for mature, rotten trees leaves it vulnerable to human activities such as salvage logging, firewood collecting, and cattle grazing. Insecticide use and land clearing may also harm populations.

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Whether it's by hunting, camping, boating, mountain biking, hiking, wildlife watching, or **ice fishing at East Fork Reservoir,** Montana is a state where everyone can find their own special way to connect with the natural world. Around here, **the outside is in us all.**

PHOTO BY DAVE RUMMANS

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